RQF LEVEL 5

TRADE: CARPENTRY

MODULE CODE: CAPEC501 INSTALL EXTERIOR CLADDING

TEACHER'S GUIDE

Module name: INSTALL EXTERIOR CLADDING

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Acronyms

- P.P.E: Personal protective equipment
- SIPs: Structural insulated panels.
- RQF: Rwanda qualification framework
- STC: Sound transmission class.
- Mm: millimetre
- Cm: Centimetre

Introduction

This core module describes the skills, knowledge and attitude required to construct sustainable exterior cladding. The learner will be able to select and arrange different materials, equipment and tools used when they work with exterior cladding. And they perform different tasks related to the course. He/she will be able to plan and execute each and every task on cladding work, so that it gains its strength.

Module Code and Title: CAPEC 501 Installation of exterior cladding.

Learning Units:

1. Prepare tools, materials and materials
2. Fix cladding frame
3. Fix edge finishing, flashing and insulation
4. Set out, cut and fix weatherboards /panels
5. Clean up

Learning Unit 1: PREPARE TOOLS, MATERIALS AND EQUIPMENTS

STRUCTURE OF LEARNING UNIT

Learning outcomes:

1.1 Appropriate selection of tools and equipment

1.2 Proper selection of material quantity requirements that are calculated in accordance with plans, specifications and quality requirements

1.3 Appropriate preparation of materials to the work application are identified, obtained, prepared, safely handled and located ready for use.

Learning outcome 1.1 Appropriate selection of tools and equipment

Duration: 15 hrs

Learning outcome 1.1 objectives:

By the end of the learning outcome, the trainees will be able to:

1. To identify clearly the types of tools, materials and equipment
2. To select appropriate tools, materials and equipment to carry out the task
3. Interpret the methods of serviceability and safety requirement for tools and equipment.

Resources

Equipment	Tools	Materials
Type of machines ✓ Portable machines ✓ Heavy machines PPE (Personal Protective Equipment) ✓ mask ✓ Goggle ✓ Safety	✓ Holding tools ✓ Setting out tools ✓ Shaving and ✓ Cutting tools ✓ Boring tools ✓ Fixing tools	**N/A**

✓ shoes ✓ Overall ✓ Helmet ✓ Grooves		

Advance preparation:

. Collection of tools and equipment to carry out tasks that are consistent with job requirements
. check for serviceability
. Lubrication for equipment.

Indicative content 1.1.1: Identification of Tools and Equipment

Summary for the trainer related to the indicative content

- **Exterior wall cladding:** is any material that is used to cover the exterior wall of your home. Cladding is available in many different types and styles from brick, stone, wood siding, and vinyl siding. Metal siding, PVC, and even cement fiber boards can be considered to be exterior wall cladding.

- **TYPES OF TOOLS:** Holding tools ex: sash clamp, vice clamp, ……
  - ✓ Setting out tools ex: try square, tape measure ….
  - ✓ Shaving and Cutting tools ex: planes, saws
  - ✓ Boring tools ex: braces, bits, chisels ……
  - ✓ Fixing tools
- **TYPES OF MACHINES** include: portable machines and heavy machines
- **P.P.E (**PERSONAL PROTECTIVE EQUIPMENT) these are:
  - ✓ Helmet
  - ✓ Hand gloves
  - ✓ Overall
  - ✓ Safety shoes
  - ✓ Face mask
  - ✓ Safety belt, etc. ……..

Theoretical learning Activity

- ✓ Brainstorming on selection of tools and equipment to install cladding
- ✓ Group discussion on selection of tools and equipment to install cladding
- ✓ Documentary research on identification of tools and equipment

Practical learning Activity

- ✓ In groups of two trainee give them Practical exercises on serviceability of tools and equipment

Points to Remember

This chapter, trainee should know the tools, and equipment that used to practice exterior cladding. Also, they have to know practical how to care and safety the tools.

They need also to know clearly each tools by its classification, and its uses.

Indicative content 1.1.2: Tools and equipment methods serviceability and safety requirement

Summary for the trainer related to the indicative content

- ✓ Cleaning
- ✓ **Oiling (greasing): Both oil and grease** are generally used by people to lubricate machines parts, tools and equipment that are used every day.
- ✓ **Toping**: Repeated sharpening will alter the shape and the height the teeth.
- ✓ **Sharping the teeth:** The saw blade is now treated to even filling with a triangle sided file, so that each tooth without exception receives 3 or 4 strokes of the file overall.
- ✓ **Setting:** Setting a saw means binding alternate teeth outwards to either side, making the cut winder that blade, so that the latter does not jam.
- ✓ **Re-sharpening:** Sharpening should take place after the setting, to avoid the tool damaging the teeth. A three- square saw file is required for the task.
- ✓ **Lubrication** is a process which aims at reducing friction between two or more moving pieces.
    - **The main purpose of lubrication**

Lubrication allows to:

- ✓ **Protect from corrosion**
- ✓ **Absorb/ reduce shocks**
- ✓ **Reduce friction (robbing/ deformation)**
- ✓ **Isolate components from contamination**
- ✓ **Clean/ rid of contaminants**

- ✓ Personal safety rules while handling tools and equipment
- **What tools are required?**

You need only a few tools:

- ✓ A saw set
- ✓ A saw file
- ✓ A flat file
- ✓ A saw vice

Theoretical learning Activity

- ✓ Brainstorming on Tools and equipment methods serviceability and safety requirement to install cladding
- ✓ Group discussion on selection of tools and equipment to install cladding

Practical learning Activity

- ✓ Practical exercises on re-sharpening hand saws, chisels and tenon saws.
- ✓ Practical exercises on lubrication

Points to Remember

Appropriate selection of tools and materials to carry out serviceability tasks.

Learning outcome 1 formative assessment

Written assessment

Q1. **True or false questions**

Answer by True and False the following statement

The problems that will happen when you use blunt tools are:

1. You will spend a lot of time on small work. **Marking guide: TRUE**
2. You will not get good quality work. **Marking guide: TRUE**

3. You will get fine work. **Marking guide: FALSE**
4. You will not get tired. **Marking guide: FALSE**
5. You will not get much money on your work. **Marking guide: TRUE**
6. You will destroy some of the tools. **Marking guide: TRUE**
7. You will not use a lot of forces when working. **Marking guide: FALSE**

Q2. **Multiple choice questions**

A. By using narrow, match the following types tools from column A with the classification of tools from column B

Number	Column A: Tools	Column B: Group of hand tools
1	Tape measure	Fixing tools or impelling tools
2	Drill brace	
3	Marking gage	Holding tools
4	Sows	
5	Pliers	Setting out tools
6	Chisel	
7	Plane	Boring or drilling tools
8	Mitre square	
9	Claw hammer	Cutting and shaving tools
10	Clamps	

Marking guide:

- **Holding tools: 10. Clamps**
- **Cutting and shaving tools: 4. saw, 7. Plane,**
- **Boring tools and drilling tools: 2. drill bits, 6. Chisel,**
- **Fixing or impelling tools: 9. claw hammer**
- **Setting tools: 1. tape measure,**

B. The following tools is used for constructing exterior cladding wall except:

Hammer bolts and nuts

Tape measure	spray gun
Spirit level	nail punch
Nails	bricks

Marking guide: Bricks

Q3. **Open ended questions**

A. Define the term "Exterior cladding"?

Marking guide

- **Cladding: is the application of one material over another to provide a skin or layer.**

B. Gives 6 types of cladding styles you may know?

Marking guide

- **brick, stone, wood siding, vinyl siding, Metal siding, PVC cladding**

C. Give 4 advantages of exterior cladding?

Marking guide

-In construction, cladding is used to provide a degree of thermal insulation
- Weather resistance
- To improve the appearance of buildings.
- is used to cover the exterior wall of your home.

D. State any 6 quality required for exterior cladding materials?

Marking guide

- **Durability**
- **Thermal insulation**
- **Fire resistance**
- **Weather resistance**
- **Strength to resist impact**
- **Easy to maintain**
- **Resilience to abrasion**

Q4. **Case studies questions**

a. State at least five (5) rules and regulation governing the use of hand tools?

Marking guide

- ✓ **Wear gloves**
- ✓ **Carry with care**
- ✓ **Don't pocket sharp objects**
- ✓ **Be aware of your surroundings**
- ✓ **Use the right tools**
- ✓ **Follow instructions**

- ✓ **Clean and return**

b. What is lubrication? And give the 5 purpose of lubrication?

Marking guide

- ✓ **Lubrication** is a process which aims at reducing friction between two or more moving pieces.

The main purpose of lubrication

- ➢ **Protect from corrosion**
- ➢ **Absorb/ reduce shocks**
- ➢ **Reduce friction (robbing/ deformation)**
- ➢ **Isolate components from contamination**
- ➢ **Clean/ rid of contaminants**

c. . State and explain the 4 process that involves in giving the shape of the saw?

Marking guide

1. Trimming/ Topping

Repeated sharpening will alter the shape and the height the teeth.

2. Sharping the teeth

The saw blade is now treated to even filling with a triangle sided file, so that each tooth without exception receives 3 or 4 strokes of the file overall. The process is repeated until all the teeth are the same shape and the base of the teeth is in a neat line.

3. Setting

Setting a saw means binding alternate teeth outwards to either side, making the cut winder that blade, so that the latter does not jam.

4. Sharpening

Sharpening should take place after the setting, to avoid the tool damaging the teeth. A three- square saw file is required for the task.

d. . What are the tools required to do the above work?

Marking guide

- ✓ A saw set
- ✓ A saw file
- ✓ A flat file
- ✓ A saw vice

Practical assessment

1. RWANDAMOTOR as company located in Kigali city,

wants to install exterior cladding on the front view of their show room to protect a building from adverse weather elements degraded by the rainfall, the dimensions of the room are 7x 7m, the height of the cladding is 2,5m, the width of the double door is 1,8m and the timber to be used is MUVURA timber also varnished.

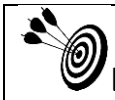
Tools and equipment required are in the workplace.

EAGLE Construction ltd is requested to prepare the cutting list for the task, and then install the cladding. As a carpenter supervisor from contracted company who is given this work, you are requested to perform/complete the work within 7hrs.

CHECK LIST 1.1	**SCORE**	
	YES	**NO**
Holding tools		
Setting out tools		
Cutting and shaving tools		
Fixing or impelling tools		
Boring tools		
Indicator: classification of varieties equipment's		
Portable machines		
Heavy duty machines		
Indicator: methods of serviceability		
Cleaning		
oiling (greasing)		
Topping		
Setting		
Re-sharpening		
Personal safety rules while handling tools and equipment		
Observation		

Learning outcome 1.2: Select and prepare materials for cladding

Duration: 15 hrs



Learning outcome 1.2 objectives:

By the end of the learning outcome, the trainees will be able to:

1. To identify clearly the types of materials for cladding

2. To select materials according to their quality

3.To determine the quantity of materials required to the given task.

Resources

Equipment	Tools	Materials
PPE (Personal Protective Equipment) - mask - Safety - shoes - Overall - Helmet - Gloves	- Reference books - drawings - Corner tape - Bits	- nails Timber - screw - rubber - filler/putty - glue - varnish - prime - sand paper - thinner - Insulator - Wall plug

Advance preparation:

. Identification of materials.
. Quality requirements of exterior cladding materials.
. Determination of quantity required materials according to the plans.

Indicative content 1.2.1: Identification of materials

Summary for the trainer related to the indicative content

- **<u>Identification of materials for cladding</u>**

✓ Aluminum weatherboards
✓ Chamfer boards
✓ Fiber cement sheet panels, sheets and planks
✓ Metal paneling
✓ Nails and screws
✓ Temperature hardboard strips
✓ Timber weatherboards
✓ Tongue and groove timber boards
✓ Reconstituted timber products
✓ Vinyl weatherboard and cladding
✓ Manufactured cladding material (strips, boards, planks and sheets)
✓ Patented metal fasteners clip and joiners

Theoretical learning Activity

✓ Brainstorming on Identification of materials to install cladding.
✓ Group discussion on the materials for install cladding

Practical learning Activity

- ✓ Practical exercises on identification of materials

Points to Remember

Proper selection of material quantity requirements that are calculated in accordance with plans, specifications and quality requirements.

Indicative content 1.2: Determination of quantity required materials according to the plans.

Summary for the trainer related to the indicative content

- ✓ **Calculation of area**
- ✓ **Calculation of volume**
- **Determination of quantity required materials according to the plans of cladding**

Calculation of area

- Firstly, calculate how many square meters your project requires, then add between 5% to 10% onto the figure calculated. This allows for wastage or on site damage to the timber. It is worth nothing that the inconvenience and extra costs incurred of not ordering enough timber can be quite significant. **How far parts should battens be positioned**?

Generally, 600mm will be recommended distance, but this can on occasion be alerted based on the thickness of cladding board and location of your project.

- **Calculation of volume**

When it comes to measure a regular wall for **cladding**, it is simple; all you have to do is divide either width or height of the wall (depending on panel orientation) by the width panels you intend to install.

Theoretical learning Activity

- ✓ Brainstorming on calculating areas and volume of the materials.
- ✓ Group discussion on Determination of quantity required materials according to the plans.

Practical learning Activity

- ✓ Site visit where there is determination of quantity required materials.

Points to Remember

- conduct the proper calculation of the required materials based on area and volume.

Indicative content 1.2: Steps involved in preparation of cladding elements

Summary for the trainer related to the indicative content

- **Steps involved in preparation of cladding elements**

- Measuring
- Marking
- Planing
- Cutting
- Jointing
- Molding / Chamfering

Theoretical learning Activity

- ✓ Brainstorming on steps involved in preparation of cladding elements
- ✓ Documentary research on materials preparation

Practical learning Activity

- ✓ Practical exercises on preparation of materials (measuring, marking, planning, and cutting).

Points to Remember

the Steps involved in preparation of cladding elements:

- Measuring, Marking, Planing, Cutting, Jointing, Molding / Chamfering

Learning outcome 1.2 formative assessment

Written assessment

1. State any 6 quality required for exterior cladding materials?

   Marking guide

   - **Durability**
   - **Thermal insulation**
   - **Fire resistance**

- **Weather resistance**
- **Strength to resist impact**
- **Easy to maintain**

- **Resilience to abrasion**
- **Minimal maintenance**

2. What are the steps that followed in installing exterior cladding weatherboards?

Marking guide

- **Number each weatherboard.**
- **Cut off both log ends 350mm in from each end.**
- **Cut the natural edge off your first board so it is straight.**
- **Cut weatherboard to required length.**
- **Sequentially nail the natural edge weatherboard from the bottom up.**

3. Highlight Steps involved in preparation of cladding elements?

Marking guide

- ✓ **Measuring**
- ✓ **Marking**
- ✓ **Planing**
- ✓ **Cutting**
- ✓ **jointing**
- ✓ **Molding/ chamfering**

4. Provide any 5 materials that are used to construct exterior cladding?

Marking guide

- ✓ **Aluminum weatherboards**
- ✓ **Chamfer boards**
- ✓ **Fiber cement sheet panels, sheets and planks**
- ✓ **Metal paneling**
- ✓ **Nails and screws**
- ✓ **Temperature hardboard strips**
- ✓ **Timber weatherboards**

Practical assessment

1. MAKUZA PEACE PLAZA as stored building located in Kigali city, wants to install exterior cladding on the front view of their meeting room to protect a building from adverse weather elements degraded by the rainfall, the dimensions of the room are 7
x 7m, the height of the cladding is 2,5m, the width of the double door is 1,8m and the timber to be used is MUVURA timber also varnished. Materials required are in the workplace.
SAM Construction ltd is requested to prepare the list of materials for the task, and then install the cladding. As a carpenter supervisor from contracted company who is given this work, you are requested to perform/complete the work within 5hrs.

CHECK LIST 1.2	**SCORE**	
	YES	**NO**
Indicator: cladding materials to be calculated		
Binding materials		
Grading of wood		
Sand papers		
Screws		
Nails		
Board/ panel		
Weatherproof		
Insulators		
Preservative materials		
Indicator: process of preparation cladding elements		
Measuring		
Marking		
Planning		
Cutting		
Jointing		
Moulding/ chamfering		
Observation		

Learning Unit 2: FIX CLADDING FRAME

STRUCTURE OF LEARNING UNIT

Learning outcomes:

2.1 Proper trimming or packing of studs to provide true surface.

2.2 Proper fitting and fixing rows of noggin.

2.3 Adequate plumb of the frame to check the flushness of the frame.

Learning outcome 2.1: Proper trimming or packing of studs to provide true surface.

Duration: 10 hrs

Learning outcome 2 objectives:

By the end of the learning outcome, the trainees will be able to:

1. Perform trimming or packing of studs to provide true surface
2. Practical fitting and fixing rows of noggins
3. Adequate plumb of the frame to check the flushness.

Resources

Equipment	Tools	Materials
- Internet - Reference Books - Machines catalogues - leveling equipment - Equipment - Measuring equipment - PPE	- Marking tools - Hand tools - Tools catalogues - levelling tools - cutting and shaving tools - fixing and impelling tools	- Timber - Nail - Bolt and nuts - screws

Advance preparation:

. Collect tools that used to task

. Collect all materials required to execute the work

. Wearing Personal protective equipment

Indicative content 2.1.1: Process of trimming

Summary for the trainer related to the indicative content

- **Process of trimming**

✓ planing
✓ Molding
✓ Chamfering
✓ Cutting

Process of trimming, fixing techniques of trimmed pieces and straightening studs.
You may need to cut your bead board to fit areas:

✓ Butt the groove end of a board into a corner and nail it in place.
✓ Align the top edge with a level line.
✓ Check the edge for plumb with a level.
✓ Press the boards with the heels of your hands to help bond the width of the wall.

Theoretical learning Activity

✓ Brainstorming on trimming of the studs
✓ Group discussion on trimming of the studs

Practical learning Activity

✓ Practical exercises on trimming of the studs

Points to Remember

On this content, trainee perform the Proper trimming or packing of studs to provide true surface.

Indicative content 2.1.2: Fixing technique of trimmed pieces to stud

Summary for the trainer related to the indicative content

Fixing technique of trimmed pieces to stud

- ✓ Joining
- ✓ Nailing
- ✓ Screwing/ bolting
- ✓ Riveting

Theoretical learning Activity

- ✓ Brainstorming on fixing technique of trimmed pieces to stud
- ✓ Group discussion on fixing technique of trimmed pieces to stud

Practical learning Activity

- ✓ Practical exercises on fixing technique of trimmed pieces to stud

Points to Remember

On This content, the trainee should know and practice the Fixing technique of trimmed pieces to stud.

Indicative content 2.1.3: Process of straightening and plumb the stud

Summary for the trainer related to the indicative content

- **Process of straightening and plumb the stud**

- ✓ Prepare area
- ✓ Bracing
- ✓ Vertical levering

Theoretical learning Activity

- ✓ Brainstorming for straightening and plumb studs

Practical learning Activity

- ✓ Practical exercises for straightening and plumb studs

Points to Remember

Trainee should keep in mind:

- ✓ Proper trimming or packing of studs to provide true surface
- ✓ Process of straightening and plumb the stud

Learning outcome 2.1 formative assessment

Written assessment

- ✓ **True or false questions**

Q1. When we align the top level of the cladding frame, we use plumb bob as tool to perform the task.

a) True
b) False

Marking guide: False

Q2. For measurement purpose, you first mark the place to measure then use tape measure to take real measurement?

a) True
b) False

Marking guide: True

- ✓ **Multiple choice**

Q3. Check the edge for plumb with a _____.

a) Plumb bob
b) Level line
c) Chalk line

<u>Marking guide</u>: b. level line

✓ **Open ended questions**

Q4. After observing these images of tools used in cladding, give their names?

Image 1 /Image 2 / Image 3 / Image 4

Image 5

<u>Marking guide:</u> Image 1: plier, Image 2: Pincer, Image 3: hacksaw

Image 4: plane, Image 5: wrench (spanner)

✓ **Case studies**

Q5. Highlight the process of trimming used in cladding?

<u>Marking guide</u>

- **cutting**
- **Planning**
- **Molding**
- **Chamfering**

Practical assessment

Q6. As carpenter technician, the client requests the technician to perform the exterior cladding task, he doesn't have any skills about the trimming of cladding. How would you help practically in such case he requested you?

CHECK LIST 2.1	SCORE	
	YES	**NO**
Indicator: Process of trimming		
planing		
Moulding		
Chamfering		
Cutting		
Indicator: Fixing technique of trimmed pieces to stud		
Joining		
Nailing		
Screwing/ bolting		
Riveting		
Indicator: process for straightening and plumb studs		
Prepare area		
Bracing		
Vertical levering		
Observation		

LEARNING OUTCOME 2.2. FIT AND FIX ROWS OF NOGGINGS

Duration: 10 hrs

Learning outcome 2 objectives:

By the end of the learning outcome, the trainees will be able to:

1. To perform Steps of fixing noggins

2. To determine the element to consider in installation of noggins

Resources

Equipment	Tools	Materials
- Internet - Visual aid - Reference Books - PPE - Measuring equipment	- Tools catalogues - Marking tools - Hand tools - Measuring tools - Cutting and shaving tools - Fixing and impelling tools - Scaffolding	- Timber - Nails - Screws - Bolt and nuts

Advance preparation:

. Size to be considering in noggin installation

. Collection of tools and equipment to perform the task

. Prepare the workplace

Indicative content 2.2.1: Steps of fixing noggins

Summary for the trainer related to the indicative content

- **Steps of fixing noggins**

✓ Select the top and bottom plates
✓ Cut the floor plate (or sill) and fix down
✓ Set out studs and transfer to head plate
✓ Set out doorways
✓ Fix top plate to ceiling/joists
✓ Cut base plate out at the doorway
✓ Cut and fix studs
✓ Fit the doorway header
✓ Cut and fix noggins/ bridging

Theoretical learning Activity

✓ Brainstorming on steps of fixing noggins
✓ Group discussion on steps of fixing noggins

Practical learning Activity

✓ Practical exercises on fixing noggin

Points to Remember

On this content, trainee should know much about Proper fitting and fixing rows of noggins

Indicative content 2.2.2: Elements to be considering in noggins installation

Summary for the trainer related to the indicative content

- **Elements to be considering in noggins installation**

✓ Wall height
✓ Lining

A noggin is strut used to give rigidity to a frame cladding, fixed between joists or studs to increase strength and stiffness**.**
You will need to ensure:

- You don't apply cladding directly to any solid wall. Moisture will be trapped at the back of the timbers and they will rot. Ensure there is an air space between the timber cladding and the solid wall using battens a moisture or water that penetrates the cladding can readily escape to the outside at the bottom of cladding.
- On vertical cladding, the horizontal battens allow space for water to escape. It is best to pack the horizontal studs out from the wall by placing the vertical battens first, then the horizontal ones.
- Battens are fixed securely to the wall, using flush fixings according the manufactures guidelines. The battens must be thick enough to take the cladding nails, without having the nail points hit the bricks. We suggest at least **30mm** thick battens.

Theoretical learning Activity

✓ Brainstorming on elements to be considering in noggins installation

✓ Groups discussion on elements to be considering in noggins installation

Practical learning Activity

✓ Practical exercises on elements to be considering in noggins installation

Points to Remember

- elements to be considering in noggins installation
  - ✓ Wall height
  - ✓ Lining

Learning outcome 2.2 formative assessment

Written assessment

✓ **True or false questions**

Q1. A noggin is strut used to give rigidity to a frame cladding

a) True
b) False

Marking guide: TRUE

✓ **Multiple choice**

Q2 A noggin is strut used to give rigidity to a frame cladding, in order to increase

a) Strength
b) Stiffness
c) A and B

<u>Marking guide:</u> c) A and B

- ✓ **Open ended questions**

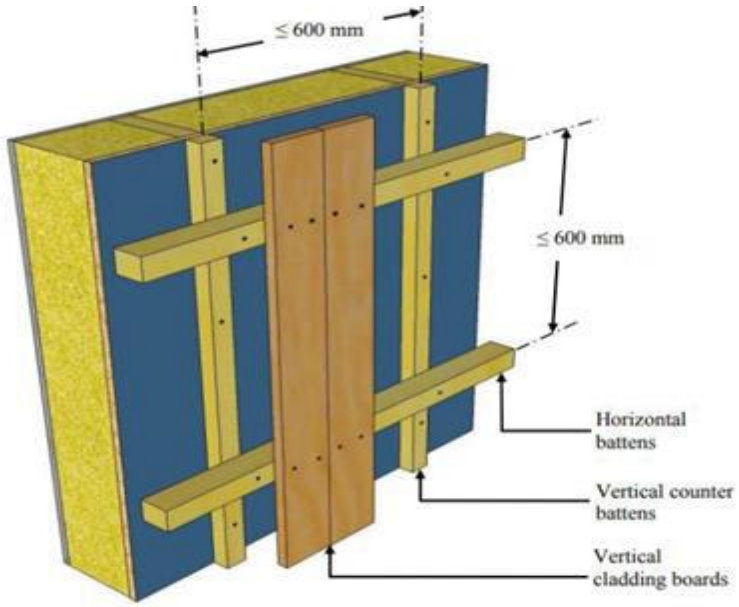
Q3. What would be ensure in order to give rigidity to the frame of cladding?

<u>Marking guide:</u>

- ✓ **You don't apply cladding directly to any solid wall. Moisture will be trapped at the back of the timbers and they will rot.**
- ✓ **On vertical cladding, the horizontal battens allow space for water to escape**
- ✓ **Battens are fixed securely to the wall, using flush fixings according the manufactures guidelines. The battens must be thick enough to take the cladding nails, without having the nail points hit the bricks. We suggest at least 30mm thick battens.**

Practical assessment

Perform this cladding frame work, which has 600mm on both side.



CHECK LIST 2.2	SCORE	
	YES	NO
Indicator: steps of fixing noggins		
Select the top and bottom plates		
Cut the floor plate (or sill) and fix down		
Set out studs and transfer to head plate		
Set out doorways		
Fix top plate to ceiling/joists		
Cut base plate out at the doorway		
Cut and fix studs		
Fit the doorway header		
Cut and fix noggins/bridging		
Indicator: Elements to be considering in noggins installation		
Wall height		
Lining		
Observation		

Learning outcome 2.3. plumb the frame to check the flushness of the frame

Duration: 10 hrs

Learning outcome 2.3 objectives:

By the end of the learning outcome, the trainees will be able to:

1. Identify the Characteristics of a levelled frame
2. Perform the Method of levelling

Resources		
Equipment	**Tools**	**Materials**
- Internet - Site - Reference Books - PPE - levelling equipment	- Tools catalogues - Marking tools - Hand tools - levelling tools - Scaffolding	- Timber
Advance preparation: . Collect tools used for leveled frame . Method of leveling . Collect materials		

Indicative content 2.3.1: Characteristics of a levelled frame

Summary for the trainer related to the indicative content

- **Characteristics of a leveled frame**

✓ Vertical
✓ Horizontal
✓ Positioning

The structural support of cladding layer, the facade, as a highly engineered system of the overall design, has a significant in the operation and configuration of the building and regardless of the level of its complexity, requires an integrated design system with that of the building of which it forms the final finish.

Theoretical learning Activity

✓ Brainstorming on characteristics of a leveled frame
✓ Group discussion on characteristics of a leveled frame

Practical learning Activity

✓ Practical exercises on the levelling.

Points to Remember

On this content, trainee should know the characteristics of a leveled frame:

- ✓ Vertical
- ✓ Horizontal
- ✓ Positioning

Indicative content 2.3.2: Method of levelling

Summary for the trainer related to the indicative content

- **Method of levelling**
  - ✓ Manual
  - ✓ Mechanical

- **The steps to follow while to install the plump the frame to check the flushness of the frame**

1. Prepare the wall. (To check the levelling, smoothness)
2. Mark the layout (measure and mark outside corner of each frame on falls on the top layout line).
3. Make a jig (Using a framing square).
4. Build the frames.
5. Install the frames.
6. Paint the frames/ polish the frames.

Theoretical learning Activity

- ✓ Site visit on the levelling
- ✓ Group discussion on levelling

Practical learning Activity

- ✓ Practical exercises on the levelling.

Points to Remember

On This content, trainee should know :

- Method of levelling
- The steps to follow while to install the plump
- Adequate plumb of the frame to check the flushness

Learning outcome 2.3 formative assessment

Written assessment

- ✓ **True or false questions**

Q1. In preparation of cladding wall, we normally check the levelling and smoothing of the wall.

a) True
b) False

Marking guide: **TRUE**

Q2. For build the cladding frame, the use of P.P.E(personal protective equipment) are not necessary.

a) False
b) True

Marking guide: **FALSE**

- ✓ **Multiple choice**

Q3. In preparation of cladding wall, we normally check the _____of the wall

a) Levelling and bearing
b) Smoothing and levelling
c) Smoothing and crushing

Marking guide: **B. smoothing and levelling**

- ✓ **Open ended questions**

Q4. What are the steps that followed in install the plumb of the frame to check flushness of frame?

Marking guide:

- ✓ **Prepare the wall. (To check the levelling, smoothness)**
- ✓ **Mark the layout (measure and mark outside corner of each frame on falls on the top layout line).**
- ✓ **Make a jig (Using a framing square).**
- ✓ **Build the frames.**
- ✓ **Install the frames.**
- ✓ **Paint the frames/ polish the frames.**

- ✓ **Case studies**

Q5. What are the Characteristics of a levelled frame?

Marking guide:

- ✓ **Positioning**

- ✓ **Vertical**
- ✓ **Horizontal**

Practical assessment

Build the cladding frame, for these measurement:

- Length 1m
- Breadth 2m
- Distance between noggins 40cm

CHECK LIST 2.3	**SCORE**	
	YES	**NO**
Indicator: Characteristics of a levelled frame		
Vertical		
Horizontal		
Indicator: Method of levelling		
Manual		
Mechanical		
Observation		

Learning Unit 3: FIX CLADDING FRAME

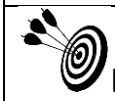
STRUCTURE OF LEARNING UNIT

Learning outcomes:

3.1 Apply weatherproof, vapour barrier and flashing material
3.2 Locate edge finishing, joiners and corner moulds
3.3 Apply wall insulation materials

Learning outcome 3.1 Apply weatherproof, vapour barrier and flashing material

Duration: 10 hrs



Learning outcome 3.1 objectives:

By the end of the learning outcome, the trainees will be able to:

1. Apply Cladding weather proof materials
2. Perform Cutting techniques of weatherproof materials.
3. Apply methods of weatherproof materials
4. Identify Required characteristics of weatherproof

Resources

Equipment	Tools	Materials
- Reference Books - Machines catalogues - Weatherproof materials - fixing equipment	- Tools catalogues - measuring tools - levelling tools - marking tools - Fixing tools	- Weather proof materials - Insulating materials - Flashing materials - Fasteners

Advance preparation:

. Collect all materials required to execute the task.

. Collect all tools needed to perform work . Wearing the personal protective equipment

Indicative content 3.1.1: Cladding weatherproof materials

Summary for the trainer related to the indicative content

- **Cladding weatherproof materials**

✓ Vapor barrier
✓ Flashing materials
✓ storm moulds
✓ weather bars,
✓ drips

Flashings are to prevent moisture from entering the wall system and to redirect it to the exterior. Flashing is typically located at exterior door and windows assemblies and any penetrations, projections or terminations in the exterior of the building.

The poor performance flashing, resulting in the loose of water intrusion protection in areas that frequently experience strong wind s, enhance d flashing details are recommended to provide the better protection against wind driven rain.

Theoretical learning Activity

✓ Brainstorming on weather proof, vapor barrier and flashing materials.
✓ Group discussion on weather proof, vapor barrier and flashing materials.

Practical learning Activity

- ✓ Practical exercises on cutting methods of weather proof, vapor barrier and flashing materials.

Points to Remember

On this content, trainee should perform weather proof, vapor barrier and flashing materials.

Indicative content 3.1.2: Cutting techniques of weatherproof materials.

Summary for the trainer related to the indicative content

Cutting techniques of weatherproof materials.

- ✓ Manual
- ✓ Mechanical

The steps to perform in installing the weather proof and vapor barrier in cladding are:

a. Lay down moisture barrier
b. Protect exposed foundation
c. Complete crawl space insulation

Required characteristics of weatherproof

Interception of water behind the cladding
- Redirection of water flowing down the face of the wall
- No rain penetrating through the cladding
- No penetration of moist air from the exterior or condensation.

Theoretical learning Activity

- ✓ Brainstorming on Cutting techniques of weatherproof materials.
- ✓ Group discussion on Cutting techniques of weatherproof materials.

Practical learning Activity

- ✓ Practical assessment on Cutting techniques of weatherproof materials.

Points to Remember (Take home message)

On this content, trainees should remember:

- ✓ Required characteristics of weatherproof.
- ✓ The steps to perform in installing the weather proof and vapor barrier in cladding.
- ✓ Cutting techniques of weatherproof materials.

Indicative content 3.1.3: Application methods of weatherproof materials

Summary for the trainer related to the indicative content

- **Application methods of weatherproof materials**

✓ Fasteners

✓ Packing

- **The steps to perform in installing the weather proof and vapor barrier in cladding are:**

a. Lay down moisture barrier

b. Protect exposed foundation

c. Complete crawl space insulation

- **Cutting techniques of weatherproof materials.**

✓ Manual

✓ Mechanical

Theoretical learning Activity

✓ Group discussion on methods of Application weather proof materials.

✓ Brainstorming on methods of Application weather proof materials.

Practical learning Activity

✓ Practical exercises on methods of Application weather proof materials.

Points to Remember

In this content, trainee should keep in mind:

✓ the methods of Application weather proof materials.

Indicative content 3.1.4: Required characteristics of Weather proof

Summary for the trainer related to the indicative content

- **Interception of water behind the cladding**

✓ Redirection of water flowing down the face of the wall
✓ No rain penetrating through the cladding
✓ No penetration of moist air from the exterior or condensation.

- **<u>Required characteristics of weatherproof</u>**

✓ Interception of water behind the cladding
✓ Redirection of water flowing down the face of the wall
✓ No rain penetrating through the cladding
✓ No penetration of moist air from the exterior or condensation

Theoretical learning Activity

- ✓ Brainstorming on characteristics weather proof materials.
- ✓ Group discussion on characteristics weather proof materials.

Practical learning Activity

- ✓ Site visit on application of weatherproof materials

Points to Remember

On this content, trainee should know such characteristics of weather proof materials. So that they will be capable to use those materials required which are good to execute the work.

Learning outcome 3.1 formative assessment

Written assessment

Q1. What are the 3 steps to perform in installing the weather proof and vapour barrier in cladding?

Marking guide:

a. Lay down moisture barrier
b. Protect exposed foundation
c. Complete crawl space insulation

Q2. Highlight the characteristics required for weatherproof?

Marking guide:

- ✓ **Redirection of water flowing down the face of the wall**
- ✓ **No rain penetrating through the cladding**
- ✓ **No penetration of moist air from the exterior or condensation.**

Q3. Clearly definition of the term flashing?

Marking guide:

Flashings are to prevent moisture from entering the wall system and to redirect it to the exterior.

Practical assessment

Q4. Apply the weather proof on the cladding frame, which has the following measurement:

- Length 1m, Width 2m, Distance 40 cm

CHECK LIST 3.1	**SCORE**	
	YES	**NO**
Indicator: Cladding weatherproof materials		
Vapor barrier		
Flashing materials		
storm mould		
weather bars,		
drips		
Indicator: Application methods of weatherproof materials		
Fasteners		
Packing		
Indicator: characteristics of weatherproof in good condition		
Interception of water behind the cladding		
Redirection of water flowing down the face of the wall		
No rain penetrating through the cladding		
No penetration of moist air from the exterior or condensation		
Observation		

Learning outcome 3.2: Locate edge finishing, joiners and corner moulds

Duration: 10 hrs

Learning outcome 3.2 objectives:

By the end of the learning outcome, the trainees will be able to:

1. Identify the types of corner joiners and moulds
2. Apply the elements to consider in locating edge finishing, joiners and corner moulds

Resources

Equipment	Tools	Materials
Internet - Site - Reference Books - Machines catalogues - levelling equipment - marking equipment	-Tools catalogues - measuring tools - levelling tools - marking tools	-Timber -Nail -Screw -Glue

Advance preparation:

. Prepare the workplace

. Collect the materials

. Collect the tools

Indicative content 3.1.1: Types of corner joiners and moulds

Summary for the trainer related to the indicative content

To install edge finishing and corner moulding, start by cutting the pieces to the right size. Next locate and mark studs as it's best to nail moulding into a support structure. When placing the moulding, first glue the edges that make contact with the wall or cladding then nail the moulding into the studs.

- **<u>Types of corner joiners and moulds</u>**

✓ Wood
✓ Stone
✓ Cements
✓ Plastics
✓ metallic

Theoretical learning Activity

✓ Brainstorming on corner joiners and mould types
✓ Group discussion on edge finishing, joiners and corner moulds types

Practical learning Activity

✓ Documentary research on edge finishing, joiners and corner moulds types

Points to Remember

On this content, trainee should keep in mind the following:

- ✓ How install edge finishing and corner moulding
- ✓ Types of corner joiners and moulds

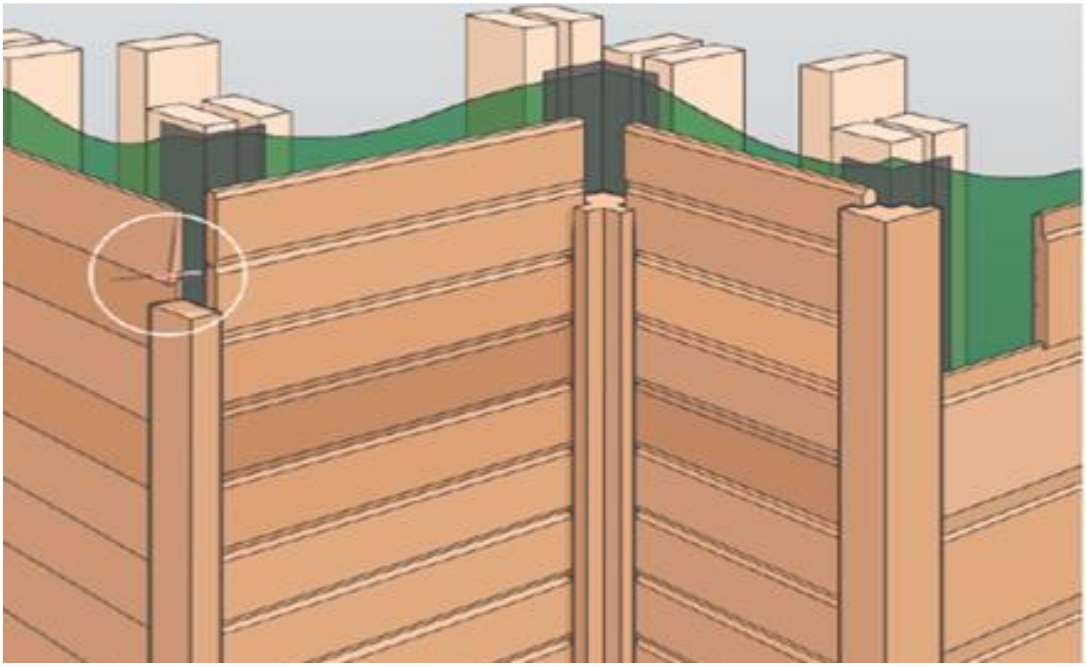
Proper locating of edge finishing, joiners, corner moulds and flashing is prepared to length and positioned, and secured to specifications.

Ic Indicative content 3.2: Elements to consider in locating edge finishing, joiners and corner moulds

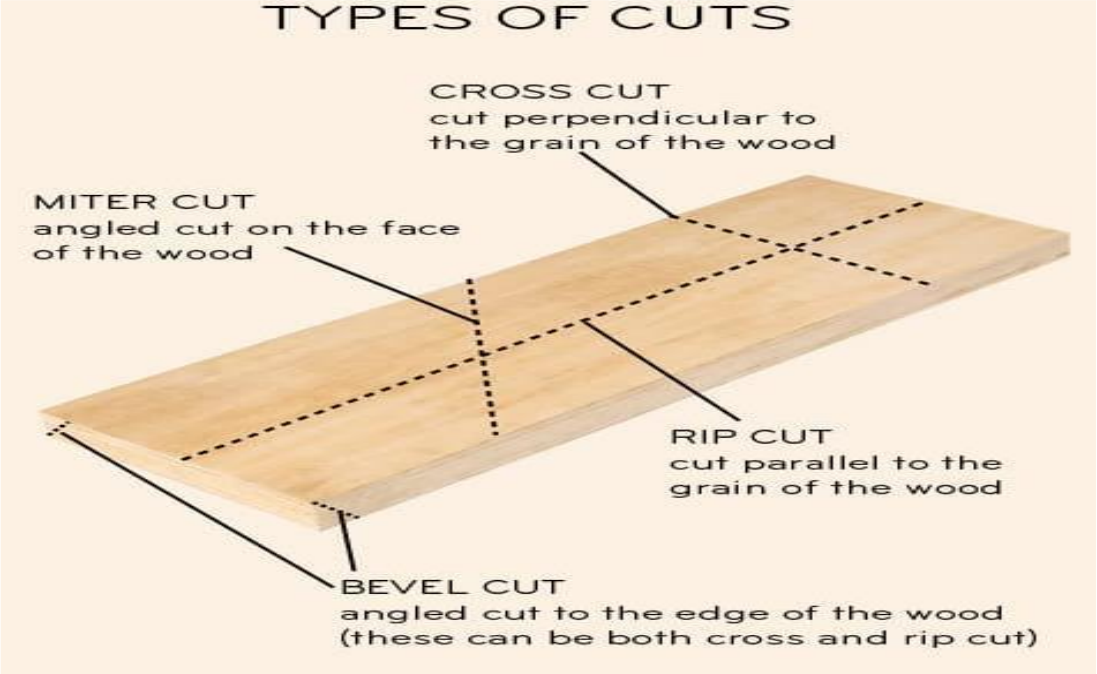
Summary for the trainer related to the indicative content

- **Elements to consider in locating edge finishing, joiners and corner moulds**

- ✓ Size
- ✓ Position
- ✓ Type of materials



- **How to cut the pieces used while to locate edge finishing, joiners and corner moulds?**



Theoretical learning Activity

✓ Brainstorming on element to consider in locating edge finishing corner joiners and mould

Practical learning Activity

✓ Site visit on element to consider in locating edge finishing corner joiners and mould

Points to Remember

On this content, trainee should remember

- ✓ Elements to consider in locating edge finishing, joiners and corner moulds
- ✓ How to cut the pieces used while to locate edge finishing, joiners and corner moulds?

Learning outcome 3.2 formative assessment

Written assessment

- ✓ **True or false questions**

Q1. Cross cutting means to cut parallel to the grain of timber.

a) True
b) False

Marking guide: FALSE

Q2. For cutting purpose, miter cut is angled cut to the face of the wood

c) False
d) True

Marking guide: TRUE

- ✓ **Multiple choice**

Q3. Rip cut is to cut_____ to the grain of the wood

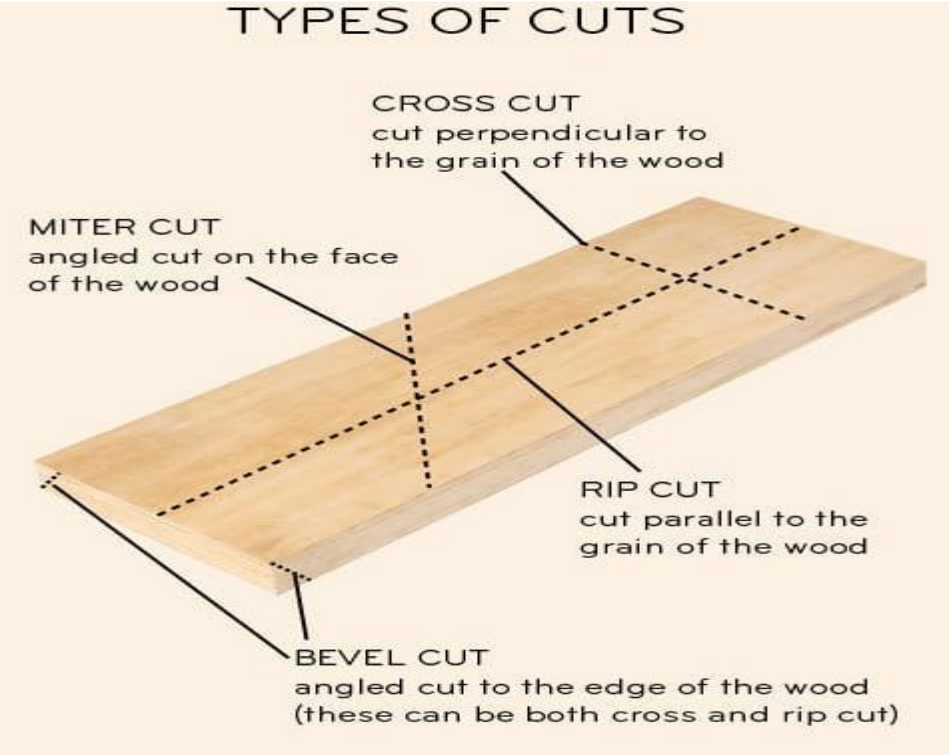
a) Parallel
b) Perpendicular

Marking choice: a) Parallel

- ✓ **Open ended questions**

Q4. How to cut the pieces used while to locate edge finishing, joiners and corner moulds?

Marking choice:



- ✓ **Case studies**

Q5. What are the elements to consider in locating edge?

Marking guide:

- ✓ **Size**
- ✓ **Position**
- ✓ **Type of materials**

Practical assessment

Try to prepare and fix the finishing edge practical to your work,

CHECK LIST3. 2	**SCORE**	
	YES	**NO**
Indicator: Types of corner joiners and moulds		
Wood		
Stone		
Cements		

Plastic		
metallic		
Indicator: Elements to consider in locating edge finishing, joiners and corner moulds		
Size		
Position		
Type of materials		
Observation		

Learning outcome 3.3: Apply wall insulation materials

Duration: 10 hrs

Learning outcome 3.3 objectives:

By the end of the learning outcome, the trainees will be able to:

1. Identify the types of insulation materials:

2. Apply all Steps for apply insulators

3. Follow the Methods of applying insulators

Resources

Equipment	Tools	Materials
- Internet - Reference Books - Marking equipment - Fixing equipment -P.P.E	- Tools catalogues - Measuring tools - Cutting tools - Boring tools	- Wall being insulated - Insulation materials

Advance preparation:

. Prepare the workplace

. Collect all insulation material required

. Collect all tools required to execute the work

Indicative content 3.3.1: Types of insulation materials:

Summary for the trainer related to the indicative content

- **Types of insulation materials:**

✓ Blanket: butts and rolls
✓ Foam board or rigid foam
✓ Loose- fill and blown-in
✓ Reflective system
✓ Rigid fibrous or fiber insulation
✓ Structural insulated panels (SIPs).
✓ Sprayed-Foam and Foamed- In-Place Insulation

- **Thermal insulation for cladding**

Cladding systems often contribute little to overall wall insulation values.
Specific performance is outlined under cladding options below.
Several composite cladding products include insulation: those with higher r R-values (the measure of a materials resistance to heat flow) can eliminate the need for bulk insulation between the frame members in many climates. With adequately designed and correctly install vapor cavities, condensation risk can be reduced or eliminated.

- **Sound insulation for cladding**

With the exception of brick veneer which is a high mass, high thickness system cladding generally provides limited sound insulation. The contribution of denser products and foam insulation backed products is usually indicated as an RW (weighted sound reduction index) rating or STC (sound transmission class).

Practical learning Activity

- ✓ Practical exercises on wall insulation application

Points to Remember

On this content, trainee should keep in mind the:

- Types of insulation materials
- Thermal insulation for cladding
- Sound insulation for cladding

Indicative content 3.3.2: Steps for apply insulators

Summary for the trainer related to the indicative content

- **<u>Steps for apply insulators</u>**

- ✓ Prepare materials
- ✓ Prepare working place
- ✓ Apply insulators
- ✓ Perform finishing
- ✓ Test work done

Theoretical learning Activity

- ✓ Brainstorming on steps for apply insulators
- ✓ Group discussion on steps for apply insulators

Practical learning Activity

- ✓ Practical exercises on steps for apply insulators

Points to Remember

On this content, trainee should know:

- ✓ All Steps for apply insulators

Indicative content 3.3.3: Methods of applying insulators

Summary for the trainer related to the indicative content

- **Methods of applying insulators**

- ✓ Fitted between studs, joists, and beams
- ✓ Exterior applications: must be covered with weather proof facing.
- ✓ Installed as part of the building structure.
- ✓ Foils, films, or papers fitted between wood-frame studs, joists, rafters, and beams
- ✓ Blown into place using special equipment, sometimes poured in
- ✓ Applied using small spray containers or in larger quantities as a pressure
- ✓ Construction workers fit SIPs together to form walls and roof of a house

Theoretical learning Activity

- ✓ Group discussion on method of applying insulators
- ✓ Brainstorming on method of applying insulators

Practical learning Activity

- ✓ Site visit on method of applying insulators

Points to Remember

On this content, trainee should know:

- ✓ Methods of applying insulators on cladding frame

Learning outcome 3.3 formative assessment

Written assessment

- ✓ **Multiple choice**

Q1. In cladding, we add foam in order to provide_____insulation

a) Thermal insulation
b) Sound insulation

Marking guide: B. Sound insulation

- ✓ **Open ended questions**

Q2. Highlight the types of insulation?

Marking guide: - Sound insulation

- **Thermal insulation**

Q3. What are the steps used of applying insulator?

Marking guide: -Step 1: Insert the insulation

Step 2: Cut the insulation

Step 3: staple in place

Step 4: Fill the gaps

Step 5: Install the sheeting

Step 6: Insulate the header joists

Step 7: Secure in place

OR: 1. Cut to width, 2. Trim to length, 3. Deal with obstacles, 4. Add the vapour barrier

✓ Case studies

Q4. What are the methods of applying insulators?

Marking guide:

- **Thermal insulation for cladding**

Cladding systems often contribute little to overall wall insulation values.

- **Sound insulation for cladding**

With the exception of brick veneer which is a high mass, high thickness system cladding generally provides limited sound insulation.

Practical assessment

Q5. Construct a frame of 1m x 2m, then inside the joist apply the insulators?

CHECK LIST 3.3	SCORE	
	YES	NO
Indicator: Insulating materials		
Blanket: butts and rolls		
Foam board or rigid foam		
Reflective system		
Rigid fibrous or fiber insulation		
Structural insulated panels (SIPs)		
Loose- fill and blown-in		
Sprayed-Foam and Foamed-In-Place Insulation		
Indicator: Steps for apply insulators		
Prepare materials		
Prepare working place		
Apply insulators		
Perform finishing		
Test work done		

Observation		

Learning Unit 4: SET OUT, CUT AND FIX WEATHERBOARDS/ PANELS

STRUCTURE OF LEARNING UNIT

Learning outcomes:
4.1 Determine weatherboards coverage

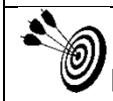
4.2 Fix gauge rod and mark stop and starting board

4.3 Cut boards to fit length of wall face

4.4 Join and fix boards/panels

Learning outcome 4.1 Determine weatherboards coverage

Duration: 5 hrs



Learning outcome 4.1 objectives:

By the end of the learning outcome, the trainees will be able to:

1. Determine weatherboards coverage
2. Fix gauge rod and mark stop and starting board
3. Cut boards to fit length of wall face
4. Join and fix boards/panels

Resources

Equipment	Tools	Materials
-Internet - Reference Books - Machines catalogues -P.P. E	- Chalk lines - Chisels - Hammers - Hand saws - Tools catalogues	-Weather board - Timbers

Advance preparation:

. Prepare the work place

. Collect all materials needed . Collect all tools required to execute the work

Indicative content 4.1.1: The relevant provisions of weather boards

Summary for the trainer related to the indicative content

- **The relevant provisions of the weatherboards**

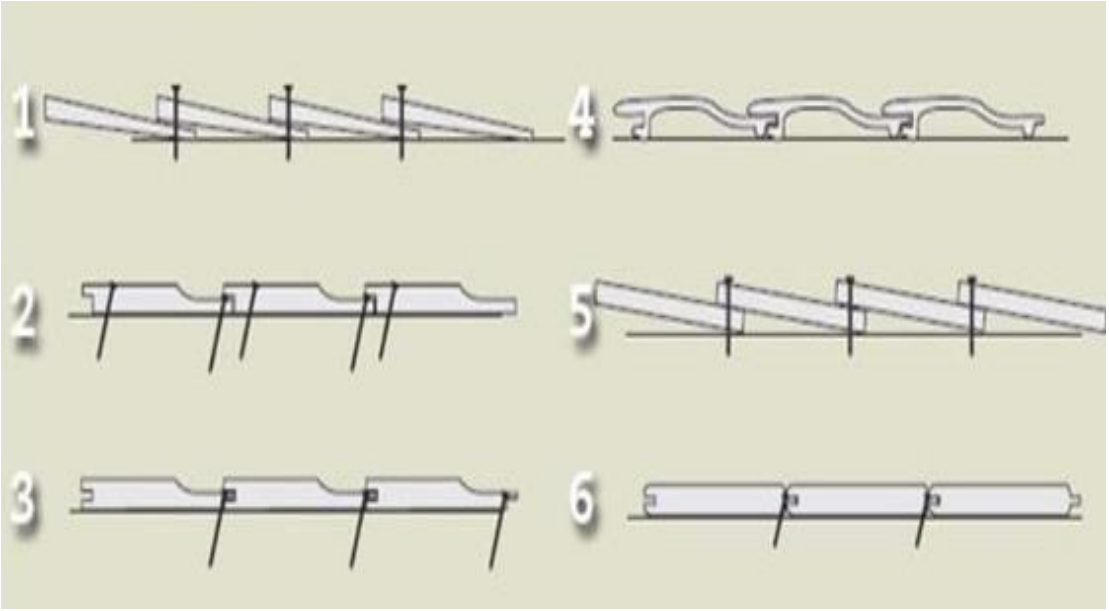
✓ External moisture
✓ Durability

- **Types and profile of weatherboard**

✓ Wooden panel
✓ Aluminum panel
✓ Plastic
✓ Steel
✓ Glass

- **The common cladding formats**

- Feather edge
- Shiplap
- Shiplap, tongue and groove
- PVC cladding
- Square edge
- Tongue and groove



Theoretical learning Activity

- ✓ Group discussion on the relevant provisions of weather boards

Practical learning Activity

- ✓ Site visit on the relevant provisions of weather boards

Points to Remember

On this content, trainee should keep remember:

- ✓ The relevant provisions of the weatherboards
- ✓ Types and profile of weatherboard

Indicative content 4.1.2: Elements for determining weather boards coverage

Summary for the trainer related to the indicative content

✓ **Elements for determining weatherboards coverage**

- **Lap**

The weatherboards used on the outside of the building are 170mm wide, the manufacturer specifications give a minimum **overlap** of 25mm, therefore the coverage for each board is 145mm. The 145mm **overlap** can be increased if the cut over openings is too severe.

- **Types and profile of boards cladding**

The common types of cladding are curtain walling, sandwich panels, rain screen, timber cladding, brick slips, metal profile cladding, tensile fabric covering and patent glazing.

- **Area of wall cladding**

The formula to find the area of the cladding walls of a rectangular room is **A=2h (L+B)**, **h** is **wall height**, **L is room length**, and B is room breadth. The area of doors and windows are ignored.

- **Steps for installing exterior cladding weatherboards**

- Number each weatherboard.
- Cut off both log ends 350mm in from each end.
- Cut the natural edge off your first board so it is straight.
- Cut weatherboard to required length.
- Sequentially nail the natural edge weatherboard from the bottom up.

Theoretical learning Activity

- ✓ Group discussion on Elements for determining weatherboards coverage
- ✓ Documentary research Elements for determining weatherboards coverage

Practical learning Activity

- ✓ Practical exercises on board quantification

Points to Remember

- On this content, trainee should keep in mind:

- ✓ Elements for determining weatherboards coverage
- ✓ Steps for installing exterior cladding weatherboards
- ✓ Proper determination of weatherboards coverage, according to the recommended lap, type and profile of board and height of wall

Learning outcome 4.1 formative assessment

Written assessment

- ✓ **True or false questions**

Q1. The minimum overlap for the weatherboard, is 45mm

a) True
b) False

Marking guide: False

Q2. To find area of rectangular cladding room, we use this formula A= 2L (b+h)

a) False
b) True

Marking guide: False

✓ Open ended questions

Q3. What are the elements for determining weatherboards coverage?

Marking guide:

- ✓ **Lap**
- ✓ **Types and profile of board**
- ✓ **Area of wall**

Q4. Highlight the elements for determining weatherboards coverage?

Marking guide:

- **Lap**

The weatherboards used on the outside of the building are 170mm wide, the manufacturer specifications give a minimum overlap of 25mm, therefore the coverage for each board is 145mm. The 145mm overlap can be increased if the cut over openings is too severe.

- **Types and profile of boards cladding**

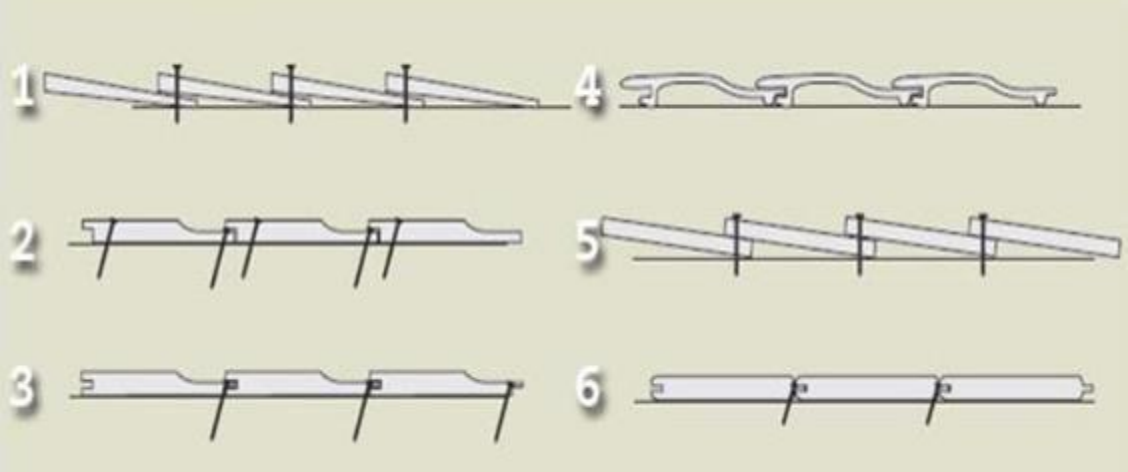
The common types of cladding are curtain walling, sandwich panels, rain screen, timber cladding, brick slips, metal profile cladding, tensile fabric covering and patent glazing.

- **Area of wall cladding**

The formula to find the area of the cladding walls of a rectangular room is A=2h (L+B), h is wall height, L is room length, and B is room breadth. The area of doors and windows are ignored.

Q5. Give and draw any 4 common cladding formats that used in finishing exterior cladding?

Marking guide:



1. Feather edge
2. Shiplap
3. Shiplap, tongue and groove
4. PVC cladding
5. Square edge
6. Tongue and groove

Q6. State all steps that followed in installing exterior cladding weatherboards?

Marking guide:

- Number each weatherboard.
- Cut off both log ends 350mm in from each end.
- Cut the natural edge off your first board so it is straight.
- Cut weatherboard to required length.
- Sequentially nail the natural edge weatherboard from the bottom up.

Practical assessment

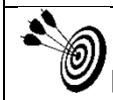
Q7. By using drawing, clearly draw the 7 any cladding format with their measures.

CHECK LIST 4.1	SCORE	
	YES	NO
Indicator: Types and profile of weatherboard		
Wooden panel		
Aluminium panel		
Plastic		

Steel		
Glass		
Indicator: Elements for determining weatherboards coverage		
Lap		
Area/surface of wall		
Types and profile		
Observation		

Learning outcome 4.2 Fix gauge rod and mark stop and starting board

Duration: 5 hrs



Learning outcome 4.2 objectives:

By the end of the learning outcome, the trainees will be able to:

1. marking a story rod
2. Mention the stop and starting board

Resources

Equipment	Tools	Materials
- levelling equipment - marking equipment	-measuring tapes and rules - nail guns - power drills - power leads - power planers - power saws	-Story rod

Advance preparation:

. Collect all materials required

. Collect all tools needed

. Prepare the work place

Indicative content 4.2.1: Marking a story Rod

Summary for the trainer related to the indicative content

Before you to fix gauge rod make sure the surface you'll be working on are clean, dry and flat.

A gauge rod is smart way to help you with your row end cladding size.

- **Steps to mark a story rod for cladding**

✓ Measure the height of the wall
✓ Width of weatherboard minus the overlap.
✓ Divide the wall height by the above answer.
✓ Wall height divided by number of boards this measurement is then transferred to

Theoretical learning Activity

✓ Brainstorming on steps to mark a story rod for cladding
✓ Documentary research on steps to mark a story rod for cladding

Practical learning Activity

✓ Practical exercises on steps to mark a story rod for cladding

Points to Remember

On this content, the trainee should keep in mind:

- All Steps to mark a story rod for cladding

Indicative content 4.2.2: Mark stop and starting board for cladding

Summary for the trainer related to the indicative content

- **Mark stop and starting board for cladding**

- The bottom weatherboard should overlap the bottom plate or bearer by a minimum of 50mm.
- Place the mastic on the ends the boards before installing and fastening in order to prevent water entering the frame during rainy conditions.

Theoretical learning Activity

- ✓ Brainstorming on stop locations and starting of board
- ✓ Documentary research on Stop locations and starting of board

Practical learning Activity

- ✓ Practical exercises on fixing gauge rod

Points to Remember

On this content, trainee should keep remember:

- Steps of Mark stop and starting board for cladding
- Adequate fixing of gauge rod and mark stop and starting board

Learning outcome 4.2 formative assessment

Written assessment

Q1. What are the steps used to mark a story rod for cladding?

Marking guide:

- Measure the height of the wall

- Width of weatherboard minus the overlap.

- Divide the wall height by the above answer.

- Wall height divided by number of boards this measurement is then transferred to the gauge rod.

Q2. Highlight the process of marking stop and starting board for cladding?

Marking guide:

- The bottom weatherboard should overlap the bottom plate or bearer by a minimum of 50mm.

- Place the mastic on the ends the boards before installing and fastening in order to prevent water entering the frame during rainy conditions.

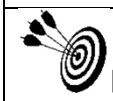
Practical assessment

Q3. Suppose you have the wall height of 3m and 6m of length. Try to mark a story rod. If you have weather board of 150 mm.

CHECK LIST 4.2	SCORE	
	YES	NO
Indicator: Marking a story rod		
Height of wall		
Overlap		
Board or weatherboard dimension		
Indicator: Mention the stop and starting board		
Overlap		
Stop		
Observation		

Learning outcome 4.3: Cut boards to fit length of wall face

Duration: 5 hrs



Learning outcome 4.3 objectives:

By the end of the learning outcome, the trainees will be able to:

1. Apply Cutting methods of boards to fit length
2. Identify the Cutting tools and equipment required to execute the work
3. Identify the Cutting principals of boards

Resources

Equipment	Tools	Materials
- Marking equipment - Power drills - Power leads - Power planers - Power saws - Circular saw	- Measuring tapes and rules - Marking tools - Cutting tools	- Boards **- Timbers**

Advance preparation:

. Collect the tools required to execute this work

. Collect the materials needed

. Prepare the working space

Indicative content 4.3.1: Cutting methods

Summary for the trainer related to the indicative content

First, cut your battens to fit the length of the wall you want to panel. Decide on the height of the panelling and cut each tongue and groove plank to length. Take one of cut planks and mark the height on the wall with a pencil. Then use a tape measure and pencil to measure and mark the other levels. There have two methods of cutting such as:

- **Cutting methods**

✓ Manual

✓ Mechanical

Theoretical learning Activity

- ✓ Brainstorming on cutting methods

Practical learning Activity

- ✓ Practical exercises on Cutting boards.

Points to Remember

On this content, trainee should keep:

- Cutting methods of board

Indicative content 4.3.2: Cutting Tools and Equipment

Summary for the trainer related to the indicative content

- **Cutting tools and equipment**

- Shaving tools. Ex: Planes
- Portable machines. Ex: Portable sander machine, Portable circular saw, jig saw etc.
- Heavy duty machines. Ex: Band saw machine, Surface planer machine, Thicknesses etc.

Theoretical learning Activity

- ✓ Brainstorming on cutting tools and equipment
- ✓ Documentary research on cutting boards

Practical learning Activity

- ✓ Practical exercises on Cutting boards.

Points to Remember

On this content, trainee should remember:

- ✓ Accurate cutting of boards to fit length of wall face.

Learning outcome 4.3 formative assessment

Written assessment

Q1. What are the methods used in cutting the weatherboard?

Marking guide:

- **Manual**
- **Mechanical**

Q2. State at least 5 Cutting tools and 5 equipment of wall face on the cladding?

Marking guide:

- **Cutting tools. Ex: Hack Saws, Tenon saw, Jig saw, Back saw, …..**
- **Portable machines. Ex: Portable sander machine, Portable circular saw, jig saw etc.**
- **Heavy duty machines. Ex: Band saw machine, Surface planer machine, Thicknesses etc.**

Practical assessment

Q3. Trainer provides different tools and a list of quantities to measure and ask learners to select tools and instruments according to the quantity to be measured. Then he gives them measurements and shape to be used, and ask them to join for checking overlap.

CHECK LIST 4.3	**SCORE**	
	YES	**NO**
Indicator: Cutting method		
Manual		
Mechanical		
Indicator: Cutting principals		
Shape		
Dimensions		
Overlap		
Observation		

Learning outcome 4.4. Join and fix boards/panels

Duration: 5 hrs

Learning outcome 4.4 objectives:

By the end of the learning outcome, the trainees will be able to:

1. Apply techniques of joining and fixing according to the type of boards

2. Identify the application method of boards

Resources

Equipment	Tools	Materials
- Power screwdrivers - P.P.E (Personal protective equipment)	- Power screwdrivers - Saw stools - Scaffolding - Spanners - Spirit levels - Squares (combination/tri) - String lines	-Boards - Timbers

Advance preparation:

. Prepare the working space

. Collect the tools required to this work

. Collect the materials needed to fulfil the work

Indicative content 4.4.1: Application method

Summary for the trainer related to the indicative content

- **Application method**

✓ Horizontal
✓ Vertical
✓ Diagonally
✓ Panel

If timber cladding is to be coated with paint or stain, at least on coat, preferably two, should be applied to all sides and ends of the boards before fixing. A second or third coat can be applied after the boards are fixed. Some pictures shown how to join and fix boards for cladding.

- **Horizontal boarding**

When mounted horizontally, the fixing can be made invisible.

For horizontal boarding not exceeding 300mm face width, the open joint chamfered boards should be at least a 1mm gap between the boards at the outer face.

The vertical overlaps of square and feather edge should be at least 20mm.

When choosing a shiplap profile, the minimum vertical overlap can be reduced to 10mm, but there should be at least a 1mm gap between rebates.

- **Vertical and diagonal**

The board designs suitable for vertical boarding are (overlapping, square edge, shiplap and tongue and groove).

When installing the profiles vertically at least two fasteners per board are necessary and at least one of these, such as a nail will be visible. It is recommended to limit the board lengths to the storey height and joints must relate to batten positions. A double sub frame is the best practice where horizontal fixing battens fastened on vertical counter battens.

Theoretical learning Activity

- ✓ Group discussion on application method of cladding

Practical learning Activity

- ✓ Practical exercises on application method of cladding

Points to Remember

On this content, the trainee should keep remembering:

- ✓ application method of cladding

Indicative content 4.4.2: Techniques of joining and fixing according to the types of boards

Summary for the trainer related to the indicative content

- **Techniques of joining and fixing according to the type of boards**

✓ Using screw
✓ Using nails
✓ Using bolts and nults
✓ Using binding materials

- **The most popular designs are:**

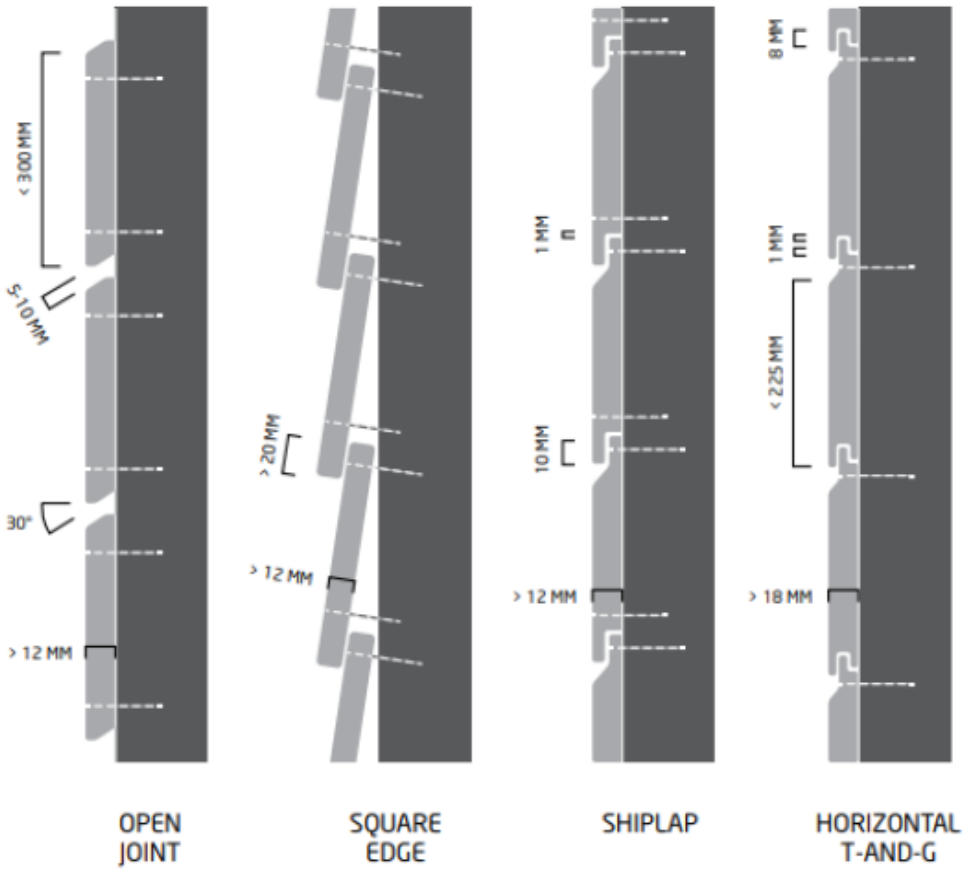
- Open jointed
- Square edge
- Shiplap
- Tongue and groove
- Other designs are of course possible

- **Using binding materials for cladding**

Binding material for cladding is any material or substance that holds or draws other materials together to form a cohesive whole mechanically, chemical by adhesion or cohesion, generally formed form paper vinyl or other plastics. Some binders are formed from rigid plastic or thick cardstock, but more commonly binders are constructed of a plastic or paper sheet wrapped around heavy paperboard and how to permeate binding materials for cladding are:

- Collect material to be used (boards, insulators).
- Collect holds materials such as glue, screws, and nails.

- Put in practice.



Theoretical learning Activity

- ✓ Group discussion on joining and fixing techniques
- ✓ Documentary research on joining and fixing techniques

Practical learning Activity

- ✓ Practical exercises on joining and fixing boards

Points to Remember

On this content, trainee should remember:

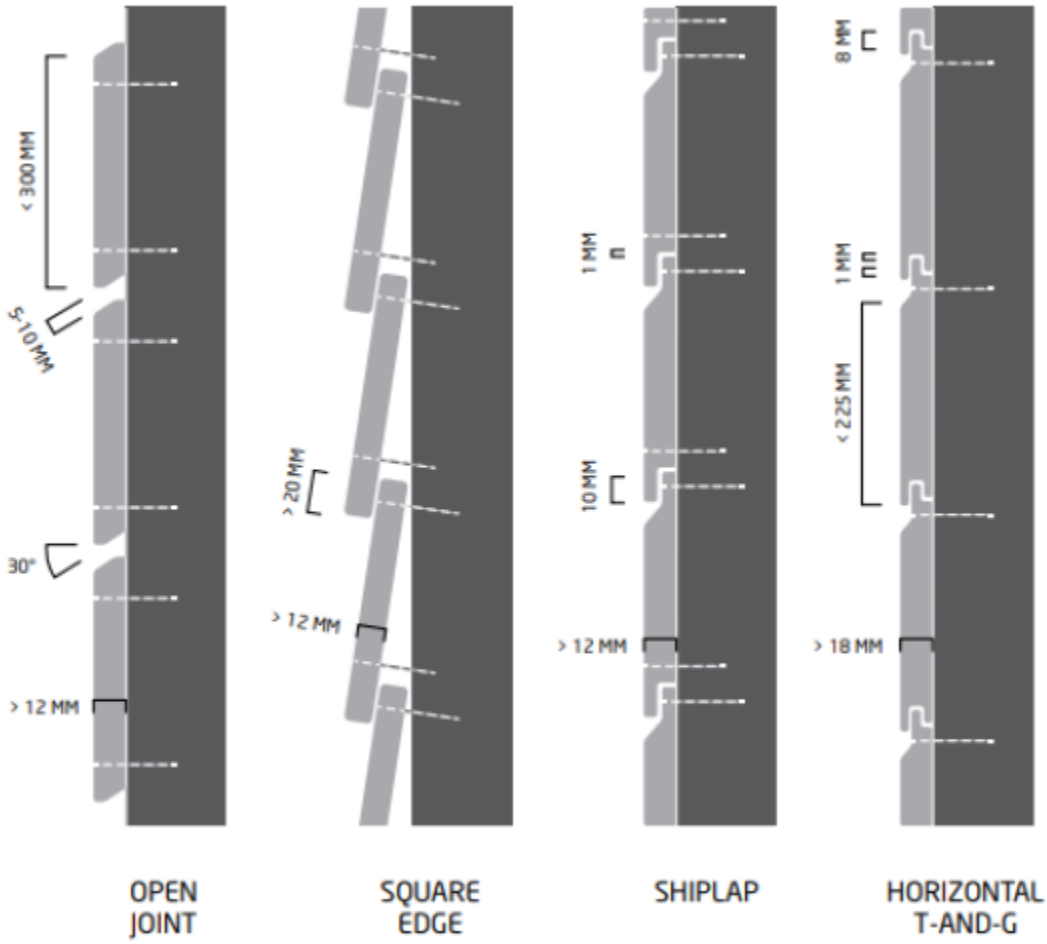
- ✓ Techniques of joining and fixing according to the type of boards
- ✓ The most popular designs
- ✓ Proper joining and fixing and finishing of the weatherboards using manufacturer
- ✓ recommendation.

Learning outcome 4.4 formative assessment

Written assessment

Q1. State and sketch the most popular designs that are used in exterior cladding?

Marking guide:



Q2. What are the techniques of joining and fixing according to the types of boards for cladding?

Marking guide:

- ✓ **Using screw**
- ✓ **Using nails**
- ✓ **Using bolts and nults**
- ✓ **Using binding materials**

Q3. Explain clearly the 2 Application method used for cladding?

Marking guide:

- **Horizontal boarding**

When mounted horizontally, the fixing can be made invisible.

For horizontal boarding not exceeding 300mm face width, the open joint chamfered boards should be at least a 1mm gap between the boards at the outer face.

The vertical overlaps of square and feather edge should be at least 20mm.

When choosing a shiplap profile, the minimum vertical overlap can be reduced to 10mm, but there should be at least a 1mm gap between rebates.

- **Vertical and diagonal**

The board designs suitable for vertical boarding are (overlapping, square edge, shiplap and tongue and groove).
When installing the profiles vertically at least two fasteners per board are necessary and at least one of these, such as a nail will be visible. It is recommended to limit the board lengths to the storey height and joints must relate to batten positions. A double sub frame is the best practice where horizontal fixing battens fastened on vertical counter battens.

Practical assessment

Q4. By use of drawing, differentiate the methods used to apply cladding?

CHECK LIST 4.4	SCORE	
	YES	NO
Indicator: Techniques of joining and fixing according to the type of boards		
Using screw		
Using nails		
Using bolts and nuts		
Indicator: Application method		
Horizontal		
Vertical		
Diagonally		
Panel		
Observation		

Learning Unit 5: CLEAN UP

STRUCTURE OF LEARNING UNIT

Learning outcomes:

5.1 Clean the work area
5.2 Clean and/or maintain tools and equipment.
5.3 Store tools and equipment

Learning outcome 5.1: Clean the work area

Duration: 4 hrs

Learning outcome 5.1 objectives:

By the end of the learning outcome, the trainees will be able to:

1. Separate wastage materials
2. Identify disposal of wastes and environment aspect
3. Apply cleaning method

Resources

Equipment	Tools	Materials
- Machines catalogues - levelling equipment - marking equipment - power drills - power leads - power planers - power saws - power screwdrivers	- Tools catalogues - chalk lines - chisels - hammers - hand saws - measuring tapes and rules - nail guns - saw stools - scaffolding - spanners - spirit levels - squares (combination/tri) - string lines	- Soap - Water - Etc

Advance preparation:

. Collect the cleaning tools

. Collect the equipment required to do this work

. Prepared the working place

Indicative content 5.1.1: Separation of wastage materials

Summary for the trainer related to the indicative content

- **Separation of wastage materials for cladding**

✓ Worn but functioning
✓ Unwanted and which requires collection
✓ Use able only by specialized waste recovery establishments
✓ Use able otherwise than by means of specialized waste recovery

Theoretical learning Activity

✓ Brainstorming on the wastage separation
✓ Group discussion on the wastage separation
✓ Documentary research

Practical learning Activity

✓ Practical exercises on the wastage separation (Ex: plastic and Hazardous)

Points to Remember

On this content, trainee should remember:

- Separation of wastage materials for cladding
- Adequate cleaning of work area

Indicative content 5.1.2: Disposal of waste and environment aspect for cladding

Summary for the trainer related to the indicative content

- **Disposal of wastes and environment aspect for cladding**

- Site clearance waste
- Excavation materials
- Chemical waste
- Construction and demolition waste
- General refuse

Theoretical learning Activity

- ✓ Brainstorming on the disposal of waste
- ✓ Group discussion on the disposal waste
- ✓ Documentary research on disposal waste

Practical learning Activity

- ✓ Site visit where there is a disposal of waste

Points to Remember

On this content, trainee keep remember:

- Disposal of wastes and environment aspect for cladding

Adequate cleaning of work area and dispose of materials in accordance with legislation and job requirements.

Indicative content 5.1.3: Clean method

Summary for the trainer related to the indicative content

- **<u>cleaning method</u>**

➢ manual method is the physical removal of all visible Waste from an item to render it safe for handling and further processing for patient care

➢ mechanical method is the removal of all visible waste by use of mechanically tools

- **Cladding Cleaning using Water Fed Poles**

Otherwise known as the 'Reach and Wash' system, the use of water fed poles ensures the effective cleaning of high level cladding in a safe and hassle-free manner.

- **Jet washing from mobile platforms**.

There are occasions when water fed poles are not the preferred method. Either the type of cladding or the access around the building result in cladding being cleaned from a mobile elevated platform.

- **Glass Cleaning or Window Cleaning**

– using a mixture of traditional window cleaning techniques and the reach and wash system.

Theoretical learning Activity

✓ Group discussion on the cleaning method waste
✓ Documentary research

Practical learning Activity

- ✓ Site visit on cleaning of waste

Points to Remember

On this content, trainee should remember:

- cleaning method required to clean cladding waste

Learning outcome 5.1 formative assessment

Written assessment

Q1. Differentiate the separation of wastage materials for cladding?

Marking guide:

- ✓ **Worn but functioning**
- ✓ **Unwanted and which requires collection**
- ✓ **Use able only by specialized waste recovery establishments**
- ✓ **Use able otherwise than by means of specialized waste recovery**

Q2. Identify the disposal of wastes and environment aspect for cladding**?**

Marking guide:

- ✓ **Site clearance waste**
- ✓ **Excavation materials**
- ✓ **Chemical waste**
- ✓ **Construction and demolition waste**
- ✓ **General refuse**

Q3. Highlight the cleaning method for cladding

Marking guide:

Manual method

Procedures of manual cleaning methods are:

- ✓ **Swiping.**
- ✓ **Dusting.**
- ✓ **Dust mopping.**
- ✓ **Manual scrubbing.**
- ✓ **Manual polishing.**
- ✓ **Spot cleaning.**

Mechanical method

Procedures of mechanical cleaning methods:

- ✓ **Suction cleaning/ Vacuum cleaning.**
- ✓ **Spray buffing.**
- ✓ **Polishing.**
- ✓ **Scrubbing.**
- ✓ **Stripping**
- ✓ **Laundering.**
- ✓ **Dry cleaning.**

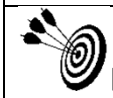
Practical assessment

Q4. Ask trainees to clean the place by choosing any tools, materials and equipment provided by the trainer

CHECK LIST 5.1	**SCORE**	
	YES	**NO**
Indicator: separation of wastage materials		
Worn but functioning		
Useable otherwise than by means of specialized waste recovery		
Useable only by specialized waste recovery establishments		
Unwanted, and which requires collection		
Indicator: Cleaning methods		
Manual		
Mechanical		
Observation		

Learning outcome 5.2: Clean and/or maintain tools and Equipment

Duration: 3 hrs



Learning outcome 5.2 objectives:

By the end of the learning outcome, the trainees will be able to:

1. Apply techniques of maintenance for cladding

2. Identify the cleaning method

Resources

Equipment	Tools	Materials
- nail guns - power drills - power leads - power planers - power saws - power screwdrivers - levelling equipment - marking equipment - Machines catalogues	- Scrub brushes. - Multi-purpose duster. - Sponges. - Vacuum. - Spray bottle - Microfiber cleaning cloths. - Broom and dustpan - hammers - hand saws - measuring tapes and rules - saw stools - scaffolding	- Soap - Water - Etc….

Advance preparation:

. Collect the tools that are needed

. Collect the materials used to maintain . Wear the personal protective equipment

Indicative content 5.2.1: Maintenance techniques

Summary for the trainer related to the indicative content

- **Types and nature of waste**

Waste can be classified into five types of waste which is all commonly found around the house. These include liquid waste, solid rubbish, organic waste, recyclable rubbish and hazardous waste. Make sure that you segregate your waste into these different types to ensure proper waste removal.
If your one such resident, by knowing the different types of wastes you will be able to be better understand that you can and cannot and recycle.

1. **Liquid waste**.

Liquid waste is commonly found both in house hold as well as in industries. This includes dirt water. Organic liquid, wash water, water detergents and even rain water.

2. Solid rubbish

Solid rubbish can include a variety of items found in your household along with commercial and industrial locations.
Solid rubbish is commonly broken into the following types:

Plastic waste

This consists of bags, containers, jars, bottles and many other products that can be found in your household. Plastic is not biodegradable, but many types of plastic can be recycled, plastic should not be mix in with your regular waste, it should be sorted and placed in your recycling bin.

Paper/card waste

This includes the packaging materials, newspapers, cardboard and other products materials. Paper can easily be recycled and reused to make sure to place them in your recycling bin or take them to your closet Brisbane recycling depot.

Tins and metals.

This can be found in various forms throughout your home.
Most metals can be recycled. Consider taking these items to a scrap yard or your closet Brisbane recycling depot to dispose of these waste types properly.

Ceramics and glass

These items can easily be recycled. Look for special glass recycling bins and bottles banks to dispose them correctly. If you still cannot grasp the concept of recycling, then an incredibly easy and efficient way to dispose solid rubbish is by hiring a Brisbane waste removal company, like 4 waste removals, to take care of your recycling for you. We will removal all of your rubbish and ensure it is disposed of properly.

Organic waste

Organic waste is another common household. All food waste, garden waste, manure and rotten meat as classified.

.

Recyclable rubbish

Recyclable rubbish includes all waste items that can be converted into products that can be used again. Solid items such as paper, metals, furniture and organic waste can all be recycled.

Hazardous waste

Hazardous waste includes all types of rubbish that are flammable, toxic, corrosive and reactive.

- **Maintenance techniques**

✓ well organized and scheduled
✓ controls hazards
✓ defines operational procedures, and trains key personnel

Practical learning Activity

- ✓ Practical exercises on tools and equipment maintenance.

Points to Remember

On this content, trainee should keep:

- Maintenance techniques for cladding

Indicative content 5.2.3: Cleaning methodology

Summary for the trainer related to the indicative content

- **<u>cleaning method</u>**
  - ➢ manual method
  - ➢ mechanical method

- Manual

Procedures of manual cleaning methods are:

- ✓ Swiping.
- ✓ Dusting.
- ✓ Dust mopping.
- ✓ Manual scrubbing.
- ✓ Manual polishing.
- ✓ Spot cleaning.

- Mechanical

Procedures of mechanical cleaning methods:

- ✓ Suction cleaning/ Vacuum cleaning.
- ✓ Spray buffing.
- ✓ Polishing.
- ✓ Scrubbing.
- ✓ Stripping
- ✓ Laundering.
- ✓ Dry cleaning

- **Waste removing techniques for cladding**

Below we will venture into six effective waste disposal methods.

1. Preventing or reducing waste generation: Extensive use of new or unnecessary products is the root cause of unchecked waste formation. The rapid population growth makes it imperative to use second hand products or judiciously use the existing ones because if not, there is potential risk of people succumbing to the ill effects of toxic wastes. A conscious decision should be made at the personal and professional level to careful control of menacing growth of wastes.

2. Recycling

Recycling serves to transform the wastes into products of their own type through industrial processing paper, glass, aluminum and plastics are commonly recycled. It is environmentally friendly to reuse the waste instead of adding them to nature. However, processing technologies are pretty expensive.

3. Incineration

Incineration features combustible of wastes to transform them into base components, which the generated heat being trapped for deriving energy. Assorted gases and inert ash are common by products. Pollution is caused by varied degrees' dependent on nature of waste combusted and incinerator design. Use of filters can check pollution. It is rather inexpensive to burn waste volume is reduced by about 90%

4.Composting

It is involving decomposing of organic wastes by microbes by allowing the waste to stay accumulated in pit for a long period of time. The nutrient rich composite can be used as plan mature. however, the process is slow and consumes a significant amount of land. Biologically reprocessing extremely improve the fertility of the soil.

4.Sanitary landfill

This involves the dumping of wastes into a landfill

4. Disposal in ocean/sea

Wastes generally of radioactive nature are dumped in the oceans far from active human habitats. However, environmentalists are challenging this method; as such an action is believed to spell doom for aquatic life by depriving the ocean wastes of its inherent nutrients.

Theoretical learning Activity

- ✓ Group discussion on the cleaning method waste
- ✓ Documentary research

Practical learning Activity

- ✓ Site visit on cleaning of waste

Points to Remember

On this content, trainee should remember:

- Appropriate cleaning and/or maintenance of tools and equipment.

Learning outcome 5.2 formative assessment

Written assessment

Q1. Give and explain 5 different types of waste for cladding?

Marking guide:

1. Liquid waste.

Liquid waste is commonly found both in house hold as well as in industries.

This includes dirt water. Organic liquid, wash water, water detergents and even rain water.

2. **Solid rubbish**

Solid rubbish can include a variety of items found in your household along with commercial and industrial locations.

3. **Organic waste**

Organic waste is another common household. All food waste, garden waste, manure and rotten meat as classified.

4. **Recyclable rubbish**

Recyclable rubbish includes all waste items that can be converted into products that can be used again. Solid items such as paper, metals, furniture and organic waste can all be recycled.

5. **Hazardous waste**

Hazardous waste includes all types of rubbish that are flammable, toxic, corrosive and reactive.

Q2. State atleat six effective waste disposal methods?

Marking guide:

- ✓ **Preventing or reducing waste generation**:

- ✓ **Recycling**
- ✓ **Incineration**
- ✓ **Disposal in ocean/sea**
- ✓ **Composting**
- ✓ **Sanitary landfill**

Q3. By use of Procedures, differentiate manual from mechanical cleaning method used in cladding?

Marking guide:

- Manual

Procedures of manual cleaning methods are:

- ✓ **Swiping.**
- ✓ **Dusting.**
- ✓ **Dust mopping.**
- ✓ **Manual scrubbing.**
- ✓ **Manual polishing.**
- ✓ **Spot cleaning.**

- Mechanical

Procedures of mechanical cleaning methods:

- ✓ **Suction cleaning/ Vacuum cleaning.**
- ✓ **Spray buffing.**
- ✓ **Polishing.**
- ✓ **Scrubbing.**
- ✓ **Stripping**
- ✓ **Laundering.**
- ✓ **Dry cleaning.**

Practical assessment

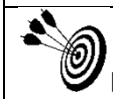
Q4. After any task ended, ask trainees to separate the waste according to their types based on the lists provided by the trainer?

CHECK LIST 5.2	SCORE	
	YES	NO
Indicator: Maintenance techniques		

Well organized and scheduled		
Controls hazards		
Defines operational procedures		
trains key personnel		
Indicator: Cleaning method		
Manual		
Mechanical		
Observation		

Learning outcome 5.3: Store tools and equipment

Duration: 3 hrs



Learning outcome 5.3 objectives:

By the end of the learning outcome, the trainees will be able to:

1. Apply storing techniques
2. Identify the Condition of storage of tools
3. store the tools and equipment according to their role of storage.

Resources

Equipment	Tools	Materials
- Internet - Site - Reference Books - Machines catalogues -Levelling equipment - Marking equipment - Power drills - Power leads - Power planers - Power saws - Power screwdrivers	- Tools catalogues - Chalk lines - Chisels - Hammers - Hand saws - Measuring tapes and rules - Nail guns - Saw stools - Scaffolding - Spanners - Spirit levels	**N/A**

	- Squares (combination/tri) - String lines	

Advance preparation:

. Collect all tools and equipment need to be stored

. Wearing the personal protective equipment

. Prepare the stored place

Indicative content 5.3.1: Storing techniques

Summary for the trainer related to the indicative content

- **You have to work with the space you have:**

✓ May be you hang them on **pegboards.**

✓ Maybe you store them in **boxes, bags or chests.**

✓ Maybe you keep them in **drawers or shelves in you shop**.

Theoretical learning Activity

✓ Brainstorming/ Group/ discussion on Storage techniques.

Practical learning Activity

- ✓ Practice exercises on Storage techniques.

Points to Remember

On this content, trainee should know:

- ✓ Storage techniques that used to keep tools clear

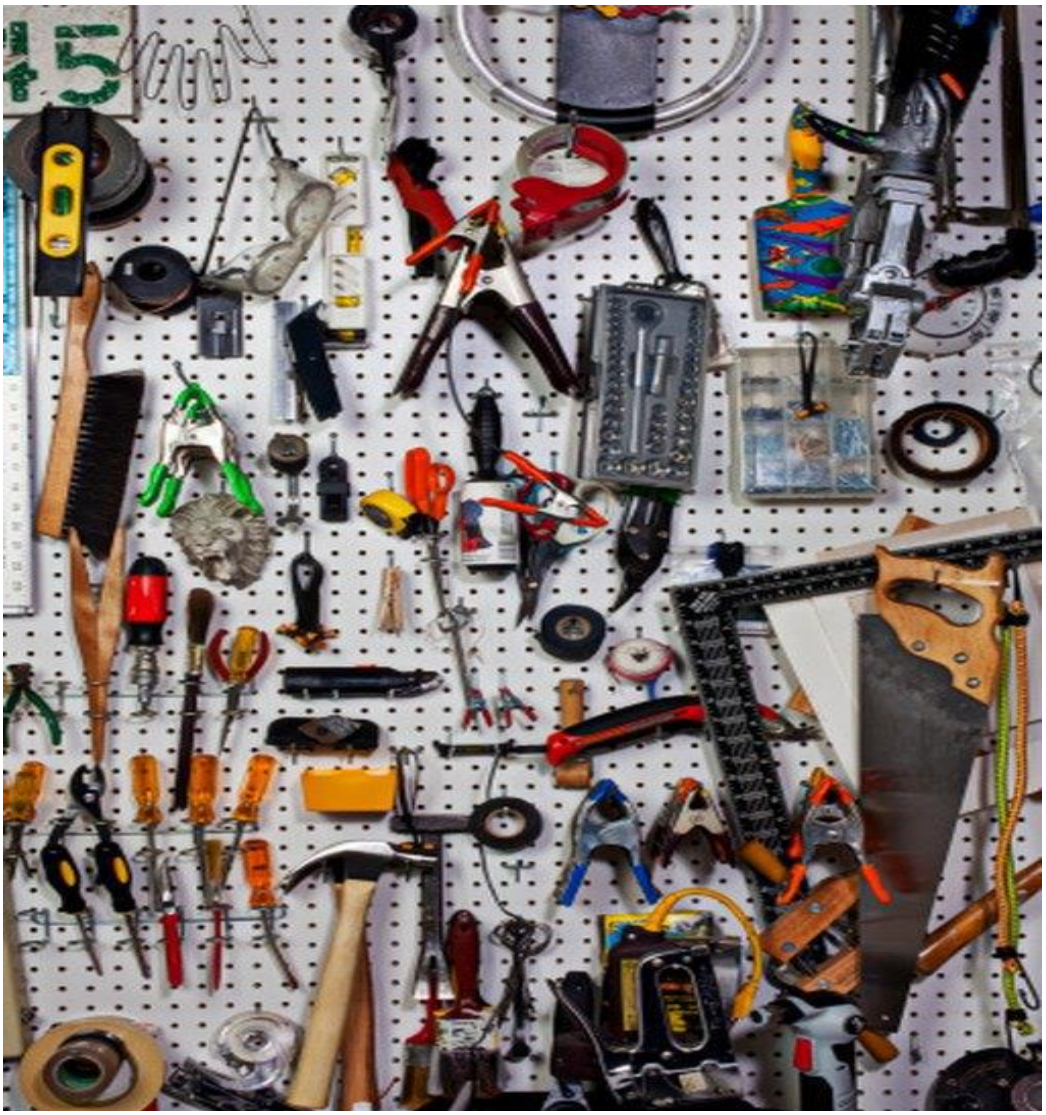
Indicative content 5.3.2: Condition of storage

Summary for the trainer related to the indicative content

- **<u>Condition of storage</u>**

They should be stored in **dry place, shelves, toolbox** in order to separate secure place so that they are safe and easy to find.

Example of storing tools and equipment



- **Follow the instructions.** Some manufacturers will have specific instructions for how to store tools, so consult your manual first and foremost. It's important to follow these instructions, especially for larger power tools like saws or drills, so they remain in good working condition.
- **Clean them off.** Tools should be cleaned each time you use them. Wipe them down with a damp rag or towel to get rid of any dirt, dust, grease or debris. Make sure garden tools are free of mud and grime. Everything should be completely dry before placing it in storage to avoid rust developing.
- **Use original cases.** Power tools usually come in hard, plastic cases, and it's recommended to keep these cases for storage whenever possible. These cases will keep your power tools in storage safe from extreme conditions, plus all the parts can be stored right alongside them in the case. No more lost power cords or chargers!
- **Invest in sturdy storage containers.** If you don't have the original container, or you're storing smaller hand tools, invest in some sturdy containers. This will not only keep your tools organized, but also allows them to be easily transportable to your next project area.
- **Store in a safe, dry place.** Along with having the right containers, another way to protect your tools is to ensure that area you're storing them in is safe and dry. Water or humidity can cause damage to tools, especially power tools.
- **Go vertical.** Tools should never be stored on the ground. Invest in some shelving for smaller tools, or hang pegboard along your workbench or on a wall in your garage. You'll be able to hang things like wrenches, hammers, box cutters, garden equipment and many other tools so they'll be easy to access at any time.

Theoretical learning Activity

- ✓ Brainstorming/ Group discussion on tools and equipment Storage.
- ✓ Documentary research

Practical learning Activity

- ✓ Practical exercises on tools and equipment Storage

Points to Remember

On this content, trainee should know:

- Condition of storage tools, materials required for cladding

Indicative content 5.3.3: Role of Tools and Equipment Storage

Summary for the trainer related to the indicative content

Keep these tool storage ideas and tips in mind, and your tool collection will be organized and accessible for that next workshop project, whether it's something big like putting an addition on your workshop or simply just finally fixing that leaky faucet!

- **Role of tools and equipment storage for cladding**

1. It is an important factor for safety and as well as arrangement.
2. Improves appearance of general – shop and construction areas.
3. Reduces overall tool cost through maintenance
4. This also ensures that tools are in good repair at hand.
5. Teacher worker principals (tools) accountability.
6. Maximize Your Space
7. Proper Maintenance
8. Etc. ……

Theoretical learning Activity

✓ Brainstorming/ Group discussion on role of storage tools and equipment.

Practical learning Activity

✓ Site visit on role of storage tools and equipment.

Points to Remember

On this content, trainee should know:

- Role of storage tools, materials required for cladding

Learning outcome 5.3 formative assessment

Written assessment

Q1. What are the Storing techniques that are used to store tools and equipment?

Marking guide:

They should be stored in dry place, shelves, toolbox in order to separate secure place so that they are safe and easy to find.

Q2. In storing place, what are the care condition of storage the tools and equipment?

Marking guide:

- **Clean them off.** Tools should be cleaned each time you use them. Wipe them down with a damp rag or towel to get rid of any dirt, dust, grease or debris.
- **Use original cases.** Power tools usually come in hard, plastic cases, and it's recommended to keep these cases for storage whenever possible!
- **Invest in sturdy storage containers.** If you don't have the original container, or you're storing smaller hand tools, invest in some sturdy containers.
- **Store in a safe, dry place.** Along with having the right containers, another way to protect your tools is to ensure that area you're storing them in is safe and dry
- **Go vertical.** Tools should never be stored on the ground. Invest in some shelving for smaller tools, or hang pegboard along your workbench or on a wall in your garage.

Q3. State at least any 5 Role of tools and equipment storage for cladding

Marking guide:

- ✓ **It is an important factor for safety and as well as arrangement.**
- ✓ **Improves appearance of general – shop and construction areas.**
- ✓ **Reduces overall tool cost through maintenance**
- ✓ **This also ensures that tools are in good repair at hand.**
- ✓ **Teacher worker principals (tools) accountability.**

Maximize Your Space
Proper Maintenance

Practical assessment

Q4. Ask trainees to select the tools, materials and equipment and store them in cupboard or shelves based on the lists provided by the trainer.

CHECK LIST 5.3	SCORE	
	YES	NO
Indicator: Storing techniques		
safe place		
In dry place		
Indicator: Condition of storage		
Clean them off		
Store is cleaned		
Indicator: Role of tools and equipment storage		
Durability		
Well arranged		
Prevent rust		
Observation		

Reference Books:

1. Carpentry and joinery (Second Edition, volume3) by Brian Porter & Christopher Tooke
2. BS 476-3: 2003, Fire tests on building materials and structures. Classification and methods of
test for external fire exposure to roofs.
3. BS 8414-1: 2002, Fire Performance of external Cladding systems.
4. BS 7956: 2000, Specification for primers for woodwork.
5. BS 1282: 1999, Wood Preservatives. Guidance on choice use and application.
6. BS 4261: 1999, Wood Preservation, Vocabulary.
7. BS 5589: 1989, Code of practice for wood preservation.
8. Building regulations, Approved Document A, Structure: 2000.
9. BS 5395: Part 1: 2000, Stairs, ladders and walkways. Code of practice for the design,
construction and maintenance if straight stairs and winder.
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