

FINISHING CONSTRUCTION WORKS Level – III

Based on October, 2023 Curriculum Version II



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ACRONYM

OHS.....	Occupational Health and Safety
PPE	Personal Protective Equipment
VOC	Volatile Organic Compounds
LEED	Leadership in Energy and Environmental Design
ASTM	American Society for Testing and Materials
ACI	American Concrete Institute
FRG	Fiber-reinforced gypsum
GFRC	Glass fiber-reinforced concrete
MDF	Medium-Density Fiberboard

INTRODUCTION TO MODULE

This module covers the knowledge, attitude and skills required to understand the required Install Pre-cast Decorative Molding. The trainees will develop the skill on install pre-cast decorative molding including Overview of pre-casting decorative work, Prepare work area, Fix and install pre-cast moulded archways, Install plaster panelled ceiling, Install ornamental mouldings Learning objective of the module.

This module covers the units:

- Overview of pre-cast decorative work
- Prepare work area
- Fix and install pre-cast moulded archways
- Install Plaster panelled ceiling
- Install Ornamental mouldings

Learning objective of the module

At the end of this session, the trainee will able to:

- Overview of pre-casting decorative work
- Prepare work area
- Fix and install pre-cast moulded archways
- Install Plaster panelled ceiling
- Install Ornamental mouldings

Module Instruction

For effective use this modules trainees are expected to follow the following module instruction:

1. Read the information written in each unit
2. Accomplish the Self-checks at the end of each unit
3. Perform Operation Sheets which were provided at the end of units
4. Do the “LAP test” giver at the end of each unit and
5. Read the identified reference book for Examples and exercis

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Unit one: Overview of pre-cast decorative work

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

- Introduction to pre-cast decorative work
- work instructions
- OHS policies and signage/barricade requirement.
- Tools and equipment
- Material needed and quantity
- Environmental protection

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, the trainee will be able to:

- Introduce decorative work
- Obtain, confirm and apply work instructions
- Follow OHS policies and signage/barricade requirement.
- Select tools and equipment
- Identify material and calculate
- Identify environmental protection.

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1.1 Introduction to pre-cast decorative work

Pre-cast decorative work is the use of pre-cast concrete elements to create decorative features on a building or structure. Pre-cast concrete is concrete that is cast in a reusable mold or "form" in a controlled factory environment. Once the concrete has cured, the form is removed and the pre-cast element is transported to the construction site and installed.

Pre-cast decorative work can be used to create a wide variety of features, including:



**Columns and
pilasters**



**Balustrades and
railings**



**Medallions
ornamental**



**Fountains and other
water features**



Furniture elements



Cornices and friezes

Pre-cast decorative work has a number of advantages over traditional cast-in-place concrete construction:

- It is more precise and consistent in quality.
- It is faster and more efficient to install.
- It can be used to create complex and intricate designs that would be difficult or impossible to produce using traditional methods.
- It is more durable and weather-resistant than traditional cast-in-place concrete.

Benefits of using pre-cast decorative work:

- Increased aesthetic appeal
- Improved durability
- Reduced maintenance
- Sustainable option

1.1.1 Construction terminologies

- **Pre-cast decorative work:** A decorative element that is manufactured in a controlled environment and then transported to the construction site for installation.
- **Substrate:** The surface or material onto which the pre-cast decorative work will be applied.
- **Formwork:** The mold in which the pre-cast decorative work is cast.
- **Releasing agent:** A substance that is applied to the formwork to prevent the pre-cast decorative work from sticking.
- **Curing:** The process of hardening the pre-cast decorative work.
- **Admixture:** A substance that is added to the concrete mix to improve its properties, such as strength, durability, or workability.
- **Sealant:** A substance that is applied to the pre-cast decorative work to protect it from the elements.
- **Architectural elements:** Decorative features that are added to a building to enhance its appearance, such as cornices, friezes, and columns.
- **Casting:** The process of pouring the concrete mix into the formwork.
- **Curing compound:** A substance that is applied to the surface of the pre-cast decorative work to help it cure properly.
- **Demolding:** The process of removing the pre-cast decorative work from the formwork.
- **Finishing:** The process of smoothing and polishing the surface of the pre-cast decorative work.
- **Installation:** The process of attaching the pre-cast decorative work to the substrate.
- **Reinforcement:** Steel bars or mesh that is added to the concrete mix to improve its strength and durability.

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1.2 work instructions

Work instructions for pre-cast decorative molds are a set of step-by-step instructions that describe how to use a pre-cast decorative mold to create a concrete product. These instructions typically include information on how to prepare the mold, prepare the concrete mix, pour the concrete into the mold, cure the concrete, and remove the concrete from the mold

There's a general outline for work instructions for pre-cast decorative molds:

Safety Precautions:

- Start by emphasizing the importance of safety.
- Provide a list of personal protective equipment (PPE) required, such as safety glasses, gloves, and dust masks.
- Instruct workers on how to properly use and maintain their PPE.

Material Preparation:

- Specify the type of mold material to be used (e.g., silicone, polyurethane, fiberglass).
- Provide instructions on how to measure and mix the mold material accurately.
- Outline any additives or release agents required for the specific mold material.
- Explain the curing time and temperature requirements for the mold material.

Mold Construction:

- Describe the process of creating the mold box or frame to contain the mold material.
- Provide dimensions and specifications for the mold box or frame.
- Explain how to properly seal the mold box to prevent leaks.
- Outline any reinforcement or support structures needed within the mold.

Mold Release and Preparation:

- Explain the process of applying a mold release agent to the mold box or frame.
- Instruct workers on how to evenly coat the interior surfaces of the mold with the release agent.
- Specify the drying or curing time required for the release agent.

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Pouring the Mold:

- Describe the procedure for pouring the mold material into the mold box or frame.
- Emphasize the importance of achieving an even and consistent pour.
- Provide instructions for removing air bubbles or voids from the mold material.
- Explain any precautions for working with fast-curing mold materials.

Curing and Demolding:

- Explain the curing time required for the mold material and how to monitor the curing process.
- Instruct workers on how to properly demold the cured mold from the mold box or frame.
- Provide tips for careful handling to avoid damaging the mold during demolding.

Mold Finishing:

- Describe any post-processing steps required, such as trimming excess material or sanding rough edges.
- Instruct workers on how to clean and prepare the mold for use or storage.
- Provide guidance on maintaining the mold's integrity and longevity.

Quality Control:

- Explain the quality control measures to be performed on the finished mold.
 - Include any specific criteria or standards that the mold must meet.
 - Outline any documentation or record-keeping requirements for quality control purposes.

Clean up and Maintenance:

- Instruct workers on how to properly clean and dispose of used materials and waste.
- Provide guidelines for maintaining a clean and organized work area.
- Explain any routine maintenance tasks required for the mold or equipment used.

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1.3 OHS policies and signage/barricade requirement

Occupational Health and Safety (OHS) policies for pre-cast decorative molds are designed to promote a safe and healthy work environment, prevent accidents and injuries, and comply with relevant regulations and standards. Key elements that can be included in OHS policies for pre-cast decorative moulds:

General Responsibilities:

- Clearly define the responsibilities of management, supervisors, and workers regarding OHS.
- Emphasize the importance of everyone's commitment to maintaining a safe work environment.
- Encourage active participation in identifying and addressing potential hazards.

Hazard Identification and Risk Assessment:

- Establish a systematic process for identifying hazards associated with pre-cast decorative mold production.
- Conduct regular risk assessments to evaluate the severity and likelihood of identified hazards.
- Implement controls to mitigate or eliminate identified hazards.

Training and Competence:

- Ensure that all workers receive appropriate training on OHS procedures, including specific hazards related to pre-cast decorative molds.
- Verify and document the competence of workers to perform their tasks safely.
- Provide ongoing training and refresher courses as needed.

Personal Protective Equipment (PPE):

- Identify the specific PPE required for working with pre-cast decorative molds (e.g., safety glasses, gloves, respiratory protection).
- Provide guidelines on proper use, maintenance, and storage of PPE.
- Encourage regular inspection of PPE and replacement when necessary.

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Safe Work Practices:

- Establish safe work practices for each step of the pre-cast decorative mold production process.
- Emphasize the importance of proper lifting techniques, ergonomic considerations, and safe tool usage.
- Promote good housekeeping practices to minimize slips, trips, and falls.

Machinery and Equipment Safety:

- Ensure that all machinery and equipment used in pre-cast decorative mold production are properly maintained and inspected.
- Implement lockout/tag out procedures for maintenance and repair activities.
- Provide guidelines for the safe operation of machinery and equipment, including proper guarding and emergency stop procedures.

Emergency Preparedness:

- Develop emergency response plans and procedures, including evacuation routes and assembly points.
- Conduct regular drills to test the effectiveness of emergency procedures.
- Ensure that workers are trained in first aid.

Incident Reporting and Investigation:

- Establish a clear process for reporting and documenting incidents, near misses, and hazards.
- Conduct thorough investigations of incidents to identify root causes and implement corrective actions.
- Encourage workers to report hazards and provide feedback on OHS policies and procedures.

Ongoing Improvement:

- Regularly review and update OHS policies and procedures to reflect new hazards, regulations, and best practices.

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- Seek input from workers and OHS representatives to continuously improve safety performance.
- Monitor and analyze OHS data to identify trends and implement proactive measures.



Fig 1.1 Occupational Health and Safety

Signage

Signage should be used to warn people of the hazards associated with the work area and to instruct them on how to stay safe. Some examples of signage that may be appropriate for pre-cast decorative mold works include:

- "Danger: Pre-cast decorative mold works in progress. Stay clear."
- "Authorized personnel only."
- "Wear hard hat, safety glasses, and gloves."
- "Watch your step."
- "Wet concrete. Do not walk on."

Barricades

Barricades can be used to block off areas where pre-cast decorative mold works are in progress. This will help to prevent people from entering the work area and being injured. Some examples of barricades that may be appropriate for pre-cast decorative mold works include:

- Fences
- Concrete barriers
- Cones
- Tape

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1.4 Tools and equipment

1.4.1 Types of tools and equipment

Pre-cast decorative mold works require a range of tools and equipment to successfully construct, prepare, pour, finish, and maintain the molds.

There are some essential tools and equipment commonly used in pre-cast decorative mold works:

Mold Construction Tools

- Concrete mixers: Used to blend the concrete mixture uniformly.
- Screeds: Used to level and smooth the concrete surface.
- Trowels: Used for finishing and smoothing the concrete.
- Vibrating tables or screeds: Used to remove air bubbles and ensure even distribution of the concrete.
- Mold release agents: Used to prevent the concrete from sticking to the mold.

Mold Preparation Tools:

- Brushes or sprayers: Used to apply mold release agents onto the mold surfaces.
- Putty knives or scrapers: Used to remove excess release agents or clean the mold surfaces.

Pouring and Casting Equipment:

- Concrete buckets or wheelbarrows: Used to transport and pour the concrete into the molds.
- Concrete pumps: Used for large-scale projects to pump the concrete directly into the molds.
- Funnel or chute: Used to guide the concrete into the molds accurately.

Mold Finishing Tools:

- Chisels or carving tools: Used to create intricate designs or details on the cured concrete surface.
- Sandpaper or abrasive pads: Used for smoothing and refining the concrete surface.
- Brushes or sprayers: Used to apply sealant or protective coatings on the finished concrete.

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Quality Control Tools:

- Measuring tools (tape measure callipers): Used to ensure accurate dimensions and specifications of the pre-cast decorative molds.
- Level or laser level: Used to check the horizontal and vertical alignment of the molds.
- Moisture meters: Used to assess the moisture content of the concrete during curing.

Personal Protective Equipment (PPE):

- Safety goggles or glasses: Protect the eyes from dust, debris, or chemical splashes.
- Respirators or masks: Protect the respiratory system from dust or fumes.
- Safety gloves: Protect the hands from chemicals, sharp objects, or abrasive surfaces.
- Safety boots: Provide foot protection from heavy objects or falling debris.

Cleaning and Maintenance Tools:

- Brushes or brooms: Used to clean the molds and work area.
- Pressure washers: Used to remove stubborn stains or debris from the molds.
- Lubricants or rust inhibitors: Used to maintain the functionality and longevity of mold components.

1.4.2 Maintaining and store

Maintaining and storing tools and equipment properly is essential for the longevity and optimal performance of pre-cast decorative works. Here are some guidelines for maintaining and storing tools and equipment:

Cleaning

- Clean tools and equipment after each use to remove any concrete residue, dirt, or debris.
- Use appropriate cleaning methods for each tool or equipment type. For example, brushes or compressed air can be used for cleaning hand tools, while pressure washers may be suitable for larger equipment.
- Ensure tools and equipment is completely dry before storing them to prevent rust or corrosion.

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Lubrication

- Apply lubricants or rust inhibitors to metal parts of tools and equipment to prevent rust and maintain smooth operation.
- Follow manufacturer recommendations for suitable lubricants and application methods.

Inspection and Repair

- Regularly inspect tools and equipment for any signs of damage, wear, or malfunction.
- Repair or replace damaged or worn-out parts promptly to prevent further deterioration and ensure safe and efficient operation.
- Follow manufacturer guidelines or consult a professional for repairs and maintenance if needed.

Storage

- Store tools and equipment in a clean, dry, and well-ventilated area to protect them from moisture and environmental elements.
- Organize tools and equipment in designated storage areas to prevent damage and facilitate easy access.
- Use appropriate storage solutions such as racks, shelves, or toolboxes to keep tools organized and protected.

Tool Specific Considerations

- Follow specific maintenance instructions provided by the manufacturer for each tool or equipment type.
- Some tools may require additional care, such as blade sharpening, belt tension adjustment, or battery maintenance for powered tools.

Training and Safety

- Ensure that personnel using tools and equipment are adequately trained on their proper use, maintenance, and safety precautions.
- Provide appropriate personal protective equipment (PPE) for tool and equipment operation, including gloves, safety glasses, or hearing protection.

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1.5 Material needed and quantity

A. Required materials

Pre-cast decorative works require various materials to create visually appealing and durable decorative elements. Here are some essential materials commonly used in pre-cast decorative works:

Concrete Mix:

- Portland cement: The main binding agent in the concrete mix.
- Aggregates (such as sand, gravel, or crushed stone): Provide bulk and strength to the concrete.
- Water: Needed to hydrate the cement and activate the chemical reaction that hardens the concrete.

Reinforcement Materials:

- Steel reinforcement bars (rebar): Used to add tensile strength to the concrete.
- Wire mesh or fiber mesh: Provides additional reinforcement to prevent cracking and improve durability.

Mold Materials:

- Rubber or silicone molds: Used for creating intricate shapes and details.
- Fiberglass or plastic molds: Used for larger or more standardized shapes.
- Mold release agents: Applied to the molds to prevent the concrete from sticking.

Coloring and Surface Treatments:

- Integral color: Pigments added directly to the concrete mix to achieve uniform color throughout the element.
- Surface stains or dyes: Applied after casting to add color or create decorative effects on the surface.
- Acid stains: Chemicals used to create unique color patterns and variations on the concrete surface.

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- Concrete sealers: Protective coatings applied to enhance color, provide resistance to stains and moisture, and improve durability.

Aggregates and Decorative Elements:

- Decorative aggregates: Various types of stones, glass, shells, or other materials used to create visual interest and texture in the concrete.
- Inlays or embedded objects: Items such as tiles, glass pieces, or metal accents embedded into the concrete surface for decorative purposes.
- Stamped or textured mats: Tools used to create patterns or imitate the appearance of natural materials like stone, wood, or brick.

Adhesives and Fasteners:

- Construction adhesive: Used to bond elements together or attach decorative elements.
- Anchors or screws: Used to secure pre-cast elements to other structures or surfaces.

Cleaning and Maintenance Materials:

- Cleaning agents: Used to remove dirt, stains, or residues from the pre-cast elements.
- Protective coatings or sealants: Applied periodically to maintain the appearance and durability of the decorative elements.

B. Required quantity

Calculating the materials required for pre-cast decorative works involves determining the quantities of concrete mix, reinforcement materials, mold materials, and other additives needed for the project. Here's a general guide on how to calculate material requirements:

Concrete Mix:

- Determine the volume of concrete needed for the pre-cast element. This can be calculated by multiplying the length, width, and height of the element.
- Determine the desired mix ratio of cement, aggregates, and water. The mix ratio will depend on various factors, including the strength requirements and the type of decorative element.

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- Calculate the quantities of cement, aggregates, and water based on the mix ratio and the volume of concrete needed.
- For example, if the mix ratio is 1:2:3 (cement: sand: aggregate), and the volume of concrete needed is 1 cubic meter, you would require 0.25 cubic meters of cement, 0.5 cubic meters of sand, and 0.75 cubic meters of aggregate.

Reinforcement Materials

- Determine the type and quantity of reinforcement materials required based on the design specifications and structural requirements of the pre-cast element. This may include steel rebar, wire mesh, or fiber mesh.
- Calculate the lengths, sizes, and quantities of reinforcement materials based on the dimensions and reinforcement spacing specified in the design.

Mold Materials

- Determine the type and quantity of mold materials required based on the design and desired finish of the pre-cast element.
- This may include rubber or silicone molds, fiberglass or plastic molds, and mold release agents.
- Calculate the quantities of mold materials based on the size and complexity of the molds needed for the project.



Fig 1.2 Mold Materials

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Additives and Decorative Elements

- Determine the quantities of coloring agents, surface treatments, aggregates, inlays, or embedded objects required based on the desired aesthetics and design specifications of the pre-cast element.
- Calculate the quantities based on the recommended dosage rates or the desired effect.

Adhesives and Fasteners

- Determine the type and quantity of adhesives or fasteners required based on the assembly and installation requirements of the pre-cast elements.

To calculate the material required for pre-cast decorative works, you will need to know the following:

- The dimensions of the pre-cast decorative work
- The type of material you are using
- The mix design of the material (if applicable)

Use the following formula to calculate the volume of material required:

$$\text{Volume of material} = \text{length} * \text{width} * \text{height}$$

Use the following formula to calculate the weight of material required:

$$\text{Weight of material} = \text{volume of material} * \text{density of material}$$

The density of the material will vary depending on the type of material you are using. For example, the density of concrete is typically around 2,400 kg/m³, while the density of fiberglass is typically around 1,800 kg/m³.

Use the following formula to calculate the quantity of material required:

$$\text{Quantity of material} = \text{weight of material} / \text{weight of material per unit}$$

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The weight of material per unit will vary depending on the type of material you are using and the form in which it is purchased. For example, concrete is typically purchased by the cubic meter, while fiberglass is typically purchased by the square meter or by the kilogram.

In addition to the material itself, you may also need other materials for pre-cast decorative works, such as reinforcing steel, formwork, and release agent. The quantity of these materials required will vary depending on the specific project.

Dimensions: 1000 mm x 500 mm x 100 mm

- Material: Concrete
- Mix design: 30 MPa
- Density of concrete: 2,400 kg/m³
- Weight of concrete per cubic meter: 2,400 kg/m³
- Volume of concrete required: 1000 mm x 500 mm x 100 mm = 0.05 m³
- Weight of concrete required: 0.05 m³ x 2,400 kg/m³ = 120 kg
- **Quantity of concrete required:** 120 kg / 2,400 kg/m³ = 0.05 m³

There is an example of how to calculate the material required for a pre-cast concrete decorative panel: Calculating the material requirements for creating a pre-cast decorative concrete planter.

Sample material calculation:

- Concrete Mix:
 - Planter dimensions: Length = 1 meter, Width = 0.5 meters, Height = 0.3 meters.
 - Desired mix ratio: 1:2:3 (cement: sand: aggregate).
 - Volume of concrete needed: Length x Width x Height = 1m x 0.5m x 0.3m = 0.15 cubic meters.
- Quantities of materials:
 - Cement: 0.15 cubic meters x 1/6 (1 part cement in the mix ratio) = 0.025 cubic meters or 25 liters.

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- Sand: $0.15 \text{ cubic meters} \times \frac{2}{6}$ (2 parts sand in the mix ratio) = 0.05 cubic meters or 50 liters.
- Aggregate: $0.15 \text{ cubic meters} \times \frac{3}{6}$ (3 parts aggregate in the mix ratio) = 0.075 cubic meters or 75 liters.

1.6 Environmental protection

Pre-cast decorative works can incorporate various environmental protection measures to minimize their environmental impact and promote sustainable practices. Here are some considerations for environmental protection in pre-cast decorative works:

Material Selection

- Use environmentally friendly materials: Choose materials with low environmental impact, such as locally sourced aggregates, recycled content, or alternative cementitious materials like fly ash or slag.
- Opt for low-toxicity materials: Select materials that have minimal harmful effects on human health and the environment, such as low VOC (Volatile Organic Compounds) sealants or adhesives.

Waste Management

- Minimize waste generation: Optimize material calculations to minimize waste, and employ efficient production processes to reduce material scrap and offcuts.
- Recycle and reuse: Implement practices to recycle or reuse materials such as concrete, aggregates, or molds whenever possible.

Energy Efficiency:

- Improve energy efficiency in manufacturing processes: Utilize energy-efficient equipment, optimize production layouts, and employ energy-saving technologies to reduce energy consumption during the manufacturing of pre-cast elements.

Water Conservation

- Implement water-saving measures: Use water-efficient equipment and processes, and recycle or reuse water whenever feasible.

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- Proper stormwater management: Implement strategies to manage stormwater runoff effectively, such as using permeable paving or rainwater harvesting systems.

Environmental Regulations and Certifications

- Comply with environmental regulations: Ensure compliance with local, regional, and national environmental regulations and permits.
- Seek certifications: Consider obtaining certifications such as LEED (Leadership in Energy and Environmental Design) or other recognized sustainable building certifications to demonstrate commitment to environmental sustainability.

Life Cycle Assessment

- Conduct life cycle assessments: Evaluate the environmental impact of pre-cast decorative works throughout their entire life cycle, including raw material extraction, manufacturing, transportation, use, and end-of-life disposal. Use the assessment results to identify areas for improvement and implement sustainable practices.

Education and Awareness

- Promote environmental awareness: Educate employees, contractors, and clients about the importance of environmental protection and sustainable practices. Encourage responsible use of resources and waste reduction.

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Self-Check 1

Name..... ID..... Date.....

Part I: True or False question

I. Instruction: Say true if the statement is correct and false if the statement is incorrect.

1. Pre-cast decorative work can be made from a variety of materials, including concrete, stone, and fiberglass.
2. Pre-cast decorative work can help reduce construction time and on-site labor costs.
3. Pre-cast decorative work involves creating decorative elements such as columns, cornices, and balustrades in a controlled factory environment before transporting them to the construction site.

Part II: Matching

Instruction: Match the following terms related to pre-cast decorative work with their corresponding descriptions:

<u>A</u>	<u>B</u>
1 Mold	A. The process of placing pre-cast decorative elements into their designated positions on the construction site.
2 Finishes	C. Additional materials, such as aggregates or fibers, incorporated into the pre-cast decorative elements to enhance their strength and durability.
3 Panel	D. The surface treatments or textures applied to pre-cast decorative elements to achieve the desired aesthetic appearance.
4 Installation	E. Individual pre-cast units that are manufactured off-site and then assembled or attached together during construction.

Part III: Short Answer Questions

1. What is pre-cast decorative work?
2. What are some examples of pre-cast decorative work?
3. What are the benefits of using pre-cast decorative work?

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Unit two: Prepare work area

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

- Substrate and work area
- Substrate conformance to Standard
- work area clearing

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, the trainee will be able to:

- Prepare substrate and work area
- Check substrate conformance to Standard
- Clear work area

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2.1 Substrate and work area

In the context of pre-cast decorative works, the substrate refers to the surface or material onto which the pre-cast decorative work will be applied. The substrate must be strong, stable, and smooth enough to support the weight of the pre-cast decorative work. It must also be free of any defects that could affect the appearance or durability of the pre-cast decorative work.

The type of substrate that is most appropriate for a particular pre-cast decorative work will depend on the weight and size of the work, the desired appearance, and the environmental conditions in which the work will be installed.

For example, if a pre-cast decorative work is heavy or large, it is important to choose a substrate that is strong enough to support its weight. If the pre-cast decorative work will be installed in an outdoor environment, it is important to choose a substrate that is resistant to weathering. And if the pre-cast decorative work will be installed in a high-traffic area, it is important to choose a substrate that is durable and easy to clean.

When it comes to pre-cast decorative works, the choice of substrate is crucial for ensuring the durability and performance of the finished product. The substrate refers to the underlying material or surface on which the pre-cast decorative element will be applied or installed.

There are some common substrate options for pre-cast decorative works:

Concrete Substrate

- Concrete is a popular substrate for pre-cast decorative works due to its strength, stability, and compatibility with various decorative finishes.
- Ensure that the concrete substrate is properly cured, clean, and free from any contaminants or loose particles before applying the pre-cast decorative element.

Masonry Substrate

- Masonry substrates, such as brick, block, or stone, can serve as a suitable base for pre-cast decorative works.

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- Ensure that the masonry substrate is structurally sound, properly cleaned, and prepared to promote good adhesion of the pre-cast decorative element.

Wood Substrate

- In some cases, pre-cast decorative works may be applied to wood substrates, such as wooden panels or boards.
- Ensure that the wood substrate is properly sealed, stable, and free from any rot, moisture, or termite damage.

Metal Substrate

- Metal substrates, such as steel or aluminum, can be used for pre-cast decorative works in certain applications.
- Ensure that the metal substrate is clean, free from rust or corrosion, and properly prepared to promote adhesion of the pre-cast element.

Fiber Cement Substrate

- Fiber cement boards or panels can serve as a suitable substrate for pre-cast decorative works, particularly in exterior applications.
- Ensure that the fiber cement substrate is properly installed, adequately supported, and suitable for the intended load and design requirements.

Existing Structures

- In some cases, pre-cast decorative elements may be installed on existing structures, such as walls or columns.
- Ensure that the existing structure is structurally suitable to support the additional weight and forces imposed by the pre-cast decorative element.

Work area

The work area for pre-cast decorative works should be clean, well-ventilated, and free of hazards. It should also be large enough to accommodate the pre-cast decorative work and all of the necessary equipment and materials.

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The general steps involved in preparing the substrate for pre-cast decorative work:

- 1. Surface Cleaning:** Thoroughly clean the substrate surface to remove any dirt, dust, grease, or other contaminants. Use appropriate cleaning methods such as pressure washing, scrubbing, or chemical cleaning agents, depending on the substrate material and the nature of the contaminants.
- 2. Repair and Patching:** Inspect the substrate for any cracks, voids, or damaged areas. Repair and patch these areas using suitable repair materials, such as epoxy-based fillers or patching compounds, to ensure a smooth and sound surface.
- 3. Leveling and Smoothing:** If the substrate has uneven or rough areas, level and smooth them using techniques like grinding, sanding, or applying self-leveling compounds. This step helps create a flat and uniform surface for the pre-cast decorative work.
- 4. Priming:** Apply a suitable primer or bonding agent to the prepared substrate. The primer enhances adhesion between the substrate and the pre-cast decorative element, promoting a strong bond.
- 5. Moisture Management:** Assess the moisture content of the substrate and take appropriate measures to manage moisture. This may involve applying moisture barriers or waterproofing membranes to prevent moisture migration from the substrate, which can affect the performance of the pre-cast decorative work.
- 6. Surface Preparation:** Depending on the specific requirements of the pre-cast decorative work, the substrate surface may require additional preparation. This can include techniques like sandblasting, acid etching, or mechanical scarification to ensure proper adhesion and improve the surface texture for the pre-cast decorative element.
- 7. Compatibility Testing:** Conduct compatibility tests, if necessary, to ensure that the substrate and the pre-cast decorative element are compatible. This is particularly important when using specialized finishes, coatings, or adhesives.
- 8. Pre-Installation Inspection:** Before installing the pre-cast decorative element, thoroughly inspect the prepared substrate to ensure it meets the required standards, such as cleanliness, smoothness, and structural integrity.

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2.2 Substrate conformance to Standard

To ensure the quality and conformance of the substrate for pre-cast decorative work, it is important to reference the applicable industry standards and guidelines. While it can provide some general information, it's essential to consult the specific standards and regulations relevant to your region and project.

There are some key considerations:

Building Codes:

- The substrate shall comply with the local building codes and regulations, including requirements for structural integrity, fire resistance, and other relevant factors.

ASTM Standards:

- ASTM C94: The concrete mix used for the substrate shall conform to the guidelines outlined in ASTM C94, which covers the preparation, mixing, and delivery of concrete.
- ASTM C1170: The installation of pre-cast decorative elements shall follow the recommendations provided in ASTM C1170, which specifically addresses the installation of pre-cast concrete products.

Substrate Specifications:

- Material Requirements: The substrate materials, such as concrete or masonry, shall meet the specifications outlined in the project documents, including compressive strength, density, and other relevant properties.
- Surface Preparation: The substrate shall be prepared according to the specified methods, which may include cleaning, leveling, priming, and surface tolerances as per industry standards.

Surface Tolerances:

- Flatness: The substrate shall meet the flatness requirements outlined in ACI 117, which specifies acceptable variations in flatness for concrete surfaces.
- Levelness: The substrate shall conform to the levelness standards specified in ACI 117, which provide guidelines for acceptable variations in levelness for concrete surfaces.

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Moisture Content:

- The moisture content of the substrate shall be within the acceptable limits specified in ASTM F2170. Moisture levels shall be measured using the appropriate test methods to ensure compliance.

Structural Integrity:

- The substrate shall possess sufficient structural integrity to support the weight and loads imposed by the pre-cast decorative elements. This includes meeting the minimum compressive strength requirements and any specified reinforcement guidelines outlined in the project documents.

Adhesion and Compatibility:

- The substrate shall be compatible with the adhesive or bonding systems used for securing the pre-cast decorative elements. The adhesive manufacturer's guidelines and recommendations shall be followed to ensure proper adhesion and compatibility.

Manufacturer Recommendations:

- The substrate preparation and installation shall adhere to the manufacturer's recommendations for the pre-cast decorative elements, including any specific substrate requirements, surface preparation methods, and guidelines for achieving optimal adhesion and performance.

2.3 work area clearing

Clearing the work area is an important step before commencing pre-cast decorative work. It involves preparing the site, removing obstacles, and ensuring a safe and organized environment for the installation process.

There are some considerations for clearing the work area:

Site Inspection:

- Conduct a thorough inspection of the work area to identify any potential hazards, obstructions, or safety concerns. This includes assessing the condition of the ground, nearby structures, utilities, and any existing features that may interfere with the pre-cast decorative work.

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Demolition and Removal:

- If there exist structures, fixtures, or materials in the work area that need to be removed, plan and execute the necessary demolition and disposal activities. This may involve demolishing old structures, removing debris, or clearing vegetation as required.

Utilities:

- Identify and mark the locations of underground utilities such as water lines, gas lines, electrical cables, or communication lines. Take appropriate measures to protect or relocate these utilities if necessary to avoid damage during the pre-cast decorative work.

Temporary Structures and Equipment:

- If temporary structures or equipment are present in the work area, such as scaffolding, barriers, or storage containers, relocate or remove them to create sufficient space for the installation of the pre-cast decorative elements.

Access and Pathways:

- Ensure that there is clear and safe access to the work area for workers, equipment, and materials. Clear pathways of any obstructions, debris, or uneven surfaces to facilitate movement and transportation during the installation process.

Environmental Considerations:

- If the work area is in an environmentally sensitive location, such as near bodies of water or protected habitats, take measures to minimize potential impacts. Adhere to any environmental regulations or permits, and implement erosion control measures if necessary.

Safety Measures:

- Implement appropriate safety measures to protect workers and visitors in the work area. This may include erecting safety barriers, providing personal protective equipment (PPE), and posting warning signs to communicate potential hazards.

Waste Management:

- Establish a waste management system for the work area, including designated areas for waste disposal and recycling. Properly dispose of any debris or waste generated during the clearing process.

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Storage and Organization:

- Set up designated storage areas for the pre-cast decorative elements, tools, equipment, and materials. Keep the work area organized to minimize clutter and improve efficiency during the installation process.

Site Security:

- Implement security measures to protect the work area and any valuable materials or equipment. This may include installing fencing, surveillance cameras, or hiring security personnel if required.

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Self-Check 2

Part I: True or False question

I. Instruction: Say true if the statement is correct and false if the statement is incorrect.

1. What is the purpose of preparing the substrate for pre-cast decorative work?
2. What are some common steps involved in preparing the substrate for pre-cast decorative work?
3. Why is it important to repair any cracks or damages in the substrate before installing pre-cast decorative elements?
4. How does ensuring the substrate is level and properly aligned contribute to the success of pre-cast decorative work?

Part II: Matching

Instruction: Match the following characteristics with their corresponding type

- | <u>A</u> | <u>B</u> |
|-------------|--|
| 1 Cleaning | A. Removing dirt, dust, debris, and any loose materials from the substrate surface. |
| 2 Repairing | B. Fixing cracks, damages, or imperfections on the substrate to ensure a smooth and stable surface. |
| 3 Priming | C. Applying a bonding agent or primer to the substrate to enhance adhesion between the substrate and pre-cast decorative elements. |
| 4 Leveling | D. Ensuring that the substrate surface is even and flat, creating a level base for the installation of pre-cast decorative elements. |

Part III: Short Answer Questions

1. Why is cleaning the substrate important before pre-cast decorative work?
2. Why is repairing the substrate necessary for pre-cast decorative work?
3. Why is priming the substrate important in pre-cast decorative work?
4. What is the purpose of leveling the substrate?

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Operation sheet-1

Operation Title:

- Prepare work area

Purpose:

- To create a suitable environment for the installation of the molding.

Precautions: when preparing the work area for decorative molding, it is important to take certain precautions to ensure a safe and successful installation.

- Personal Safety
- Electrical Safety
- Structural Integrity
- Adhesive Selection
- Surface Preparation
- Proper Ventilation
- Secure Work Area
- Tools and Equipment
- Fire Safety
- Cleanup

Tools and materials

- Tape measure or ruler
- Level
- Pencil or marker
- Utility knife
- Putty knife or scraper
- Sandpaper or sanding block
- Cleaning supplies
- Protective sheets or drop cloths
- Hardware and fasteners
- Personal protective equipment (PPE)
- Ladder or step stool
- Cleaning agents
- Paint or primer
- Protective equipment

Procedure:-

1. Surface Cleaning
2. Repair and Patching
3. Leveling and Smoothing
4. Priming
5. Moisture Management

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6. Surface Preparation
7. Compatibility Testing
8. Pre-Installation Inspection

Quality criteria: At the end of this operation customer satisfaction and improvement of the Work progress.

- The work area is dry and free from any moisture sources before proceeding with the installation.
- Adequate surface preparation is another critical quality criterion for preparing the work area.
- Ensure that the work area is level.
- Appropriate safety protocols and guidelines to protect both the workers and the surrounding environment

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Unit Three: Fix and install pre-cast molded archways

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

- Plaster board wall sheets
- Archway profile
- Timber arch soffit templates
- Decorative molding
- Arch finishing

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, the trainee will be able to:

- Confirm plaster board wall sheets
- Set out and cut archway profile
- Cut and fix timber arch soffit templates
- Fix and fill decorative molding
- Apply arch finishing

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3.1 Plaster board wall sheets for pre-cast molded archways

Plasterboard is primarily used for creating flat wall and ceiling surfaces, and it is not typically suitable for constructing curved or complex architectural features like archways.

Pre-cast molded archways usually require materials that can be shaped and molded to achieve the desired curvature and structural integrity. As mentioned earlier, fiber-reinforced gypsum (FRG) or glass fiber-reinforced concrete (GFRC) are commonly used for this purpose.

Using plasterboard for an archway, it would be more practical to construct a framed archway using wooden or metal studs and then attach plasterboard to the frame to create the finished surface. This method allows for more flexibility in achieving the desired shape and curvature of the archway.

To create a pre-cast molded archway using plasterboard wall sheets, the trainee will need the following tools and materials:

- Plasterboard wall sheets
- Stud finder
- Level
- Utility knife
- Drywall screws
- Drywall nails
- Drywall saw
- Hammer
- Drill
- Safety glasses
- Timber arch soffit templates
- Infill molding



Fig 3.1 pre-cast molded archway

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Fig 3.2 Plasterboard wall sheets

Benefits of using plasterboard wall sheets for pre-cast molded archways:

Versatility:

- Plasterboard is a flexible material that can be easily cut and shaped to fit various archway designs. It allows for creative freedom and customization, accommodating different arch sizes and styles.

Speed of installation:

- Compared to traditional methods of constructing archways, using plasterboard wall sheets can significantly expedite the installation process. The lightweight nature of the material and the simplicity of fixing it to the mold contribute to quicker construction timelines.

Smooth finish:

- Plasterboard provides a smooth and even surface, ensuring a seamless appearance for the archway. Once the sheets are installed, the joints and imperfections are covered with joint compound and sanded down to create a seamless finish ready for painting or other decorative treatments.

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Fire resistance:

- Plasterboard has inherent fire-resistant properties due to its gypsum core. This is an essential safety feature, as it helps to prevent the spread of fire and provides additional time for occupants to evacuate a building in case of a fire incident.

Sound insulation:

- Plasterboard also offers sound insulation properties, helping to reduce noise transmission between rooms. This can be particularly beneficial in residential or commercial settings where acoustic privacy is desired.

The basic steps:

1. Cut the plasterboard wall sheets to the desired size and shape of the archway.
2. Fix the timber arch soffit templates to the wall in the desired position of the archway.
3. Fix the infill moulding to the timber arch soffit templates and the reveals of the opening.
4. Stop the arch in accordance with the job specifications and required level of finish.
5. Once the arch is complete, remove the timber arch soffit templates.
6. Finish the seams between the plasterboard wall sheets with joint compound and tape.
7. Sand the joint compound and paint the plasterboard wall sheets.

Additional tips for creating a pre-cast molded archway using plasterboard wall sheets:

- Use a level to ensure that the archway is symmetrical.
- Use a sharp utility knife to cut the plasterboard wall sheets to size and shape.
- Use drywall screws or nails to attach the plasterboard wall sheets to the timber arch soffit templates and the infill moulding.
- Make sure that the plasterboard wall sheets are flush with each other and level.

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- Finish the seams between the plasterboard wall sheets with joint compound and tape carefully.
- Sand the joint compound and paint the plasterboard wall sheets to achieve a smooth, finished look.

To ensure conformance of plasterboard wall sheets for pre-cast molded archways, the trainees is important to follow the manufacturer's instructions and the relevant building codes and standards.

Specific things to keep in mind:

- Use the correct type of plasterboard wall sheet for the application. For pre-cast molded archways, it is important to use a type of plasterboard that is flexible and can be easily curved.
- Cut the plasterboard wall sheets to the correct size and shape. The plasterboard sheets should be cut to fit snugly against the pre-cast molded archway, with no gaps or overlaps.
- Attach the plasterboard wall sheets to the pre-cast molded archway using the appropriate screws or nails. Be careful not to over tighten the screws or nails, as this can damage the plasterboard.
- Finish the joints between the plasterboard wall sheets with joint compound. Apply two coats of joint compound, allowing each coat to dry completely before applying the next.
- Prime and paint or stain the plasterboard wall sheets to match the desired finish.

Additional tips for conformance of plasterboard wall sheets for pre-cast molded archways:

- Use a moisture-resistant type of plasterboard wall sheet in areas where there is a risk of moisture exposure, such as bathrooms and kitchens.
- Use a fire-resistant type of plasterboard wall sheet in areas where there is a risk of fire, such as near fireplaces and stoves.

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- Make sure that the plasterboard wall sheets are properly insulated to help reduce heat and noise transmission.
- If you are installing plasterboard wall sheets in a climate with high humidity, be sure to use a type of plasterboard that is specifically designed for use in humid conditions.

3.2 Set out and cut archway profile

An archway profile refers to the shape or design of an arch. Archways are architectural elements that consist of a curved opening or passage, often found in doorways, windows, or as decorative features in buildings. The profile of an archway refers to the specific curve or shape of the arch.

There are various types of archway profiles, each with its own distinct characteristics. Some common archway profiles include:

- Semi-Circular Arch
- Pointed Arch (Gothic arch):
- Elliptical Arch
- Segmental Arch
- Tudor Arch
- Basket Handle Arch

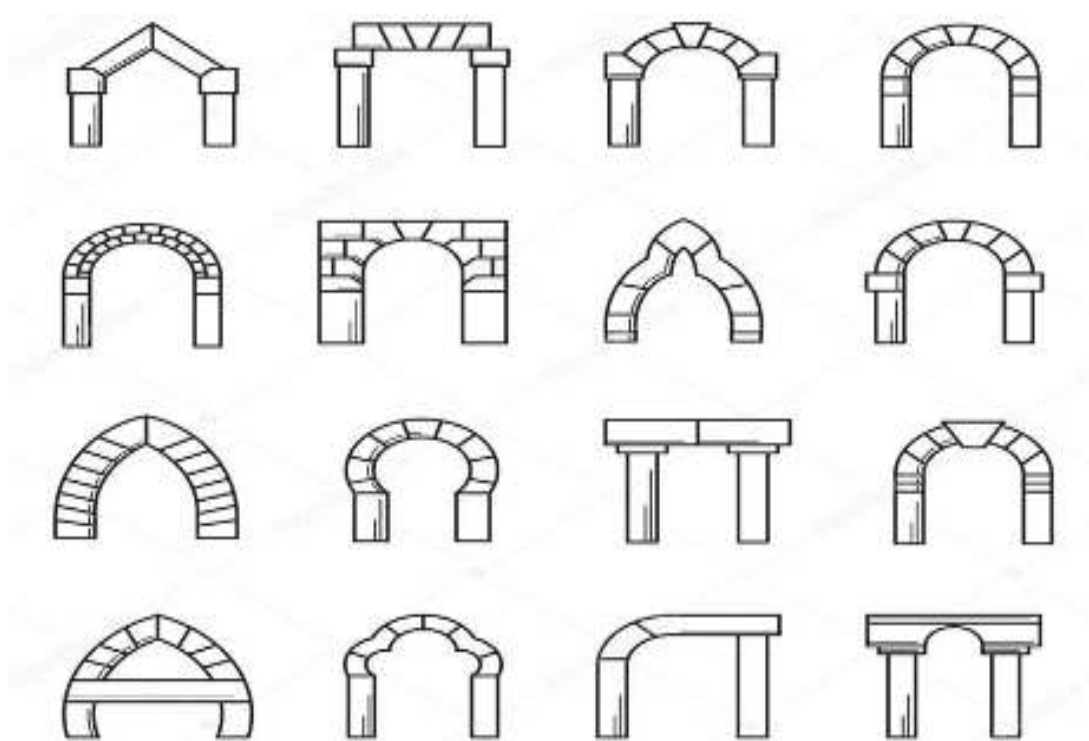


Fig 3.3 types of archway profiles

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The main purposes of archway profiles:

Structural Support:

- Archway profiles provide structural support
- The curved shape of the arch helps to transfer the load along the curve and down to the supports

Architectural Aesthetics:

- Archway profiles add visual interest and architectural beauty to a space.
- They can be used to create a focal point, define transitions between areas, or enhance the overall design style. Different arch profiles offer unique aesthetics, allowing architects and designers to achieve specific visual effects or evoke certain architectural periods or themes.

Space Definition:

- Archway profiles are often used to define and delineate spaces within a building.
- They can mark entrances, doorways, windows, or transitions between rooms, creating a sense of separation while maintaining a visual connection.
- Archways can also create a sense of flow and movement as people pass through them, enhancing the spatial experience.

Acoustic Control:

- The curved shape of archway profiles can aid in controlling sound transmission between spaces.. This can be particularly useful in spaces where acoustic privacy or noise control is important, such as theaters, concert halls, or conference rooms.

Historical and Cultural Significance:

- Archway profiles often carry historical and cultural significance, representing specific architectural styles or periods.
- They can contribute to the preservation of architectural heritage and help create a sense of continuity with the past.
- Arch profiles can evoke a sense of tradition, elegance, or grandeur, depending on the architectural context.

Symbolism and Meaning:

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- In some cases, archway profiles can hold symbolic or metaphorical meanings. They can represent unity, strength, or the connection between different elements or spaces.
- Archways have been used for centuries as symbols of transition, passage, and thresholds, conveying a sense of movement or transformation.

For choosing the right archway profile the trainees should:

- Consider the overall style of your home or building.
- Think about the function of the archway. Is it a doorway, window, or decorative feature?
- Choose a profile that will complement the other architectural elements in your home or building.
- If you are not sure what type of profile to choose, consult with a professional architect or designer.

Setting out and cutting

Setting out and cutting an archway profile involves careful planning, measurement, and precise cutting of materials. There's a step-by-step guide on how to set out and cut an archway profile:

Materials and tools you will need:

- Archway template or design
- Plywood or MDF sheets
- Measuring tape
- Pencil or marker
- Jigsaw or coping saw
- Sandpaper or rasp
- Clamps or fasteners

1. Design and Template:

- Start by designing or obtaining an archway template or design that suits your requirements. This can be a pre-made template or a custom design created based on your specifications. Ensure that the template represents the desired shape and dimensions of the archway profile.

2. Measure:

- Measure the width and height of the desired archway opening. Transfer these measurements onto your plywood or MDF sheets. Since archways have a curved shape,

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you'll need to measure both the vertical and horizontal dimensions at various points along the curve.

3. Mark the Profile:

- Using a measuring tape, mark the measurements and outline of the archway profile onto the plywood or MDF sheets.
- Use a pencil or marker to make clear and visible marks.

4. Cut the Profile:

- Secure the plywood or MDF sheet onto a work surface using clamps or fasteners to prevent movement during cutting. If using a jigsaw, use a blade suitable for cutting wood. Start cutting along the marked profile, following the curve carefully. Take your time and make smooth, controlled cuts. If using a coping saw, start by drilling a pilot hole on the inside of the archway profile and then insert the saw blade and cut along the marked profile.

5. Finishing Touches:

- Once the archway profile is cut, use sandpaper or a rasp to smooth the edges and refine the shape of the arch. Sanding will help achieve a clean and professional finish.

6. Test the Fit:

- Place the cut archway profile against the opening to test the fit. Make any necessary adjustments by trimming or sanding the edges until the profile fits perfectly within the opening.

7. Repeat for Multiple Profiles:

- If you have multiple archway profiles to cut, repeat steps 2 to 6 for each piece, ensuring consistency in measurements and shape.



Fig 3.4 profiles

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3.3 Timber arch soffit templates

Timber arch soffit templates are essential components in the construction of pre-cast molded archways. These templates are custom-made wooden structures that serve as molds for creating the arch-shaped concrete elements of the archway. They play a crucial role in shaping and supporting the concrete during the casting process, ensuring accurate and consistent results.

Creating timber arch soffit templates for pre-cast molded archways involves a series of steps. There's a general guide on how to cut and fix timber arch soffit templates:



Fig 3.5 Timber arch soffit templates

1. Gather the necessary tools and materials:

- Timber boards: Choose a suitable timber species for your templates.
- Measuring tape, pencil, and straightedge: These will be used for marking and measuring.
- Circular saw or jigsaw: You'll need a saw to cut the timber boards.
- Screwdriver or drill: Depending on the fixing method, you'll need a screwdriver or drill to attach the templates.
- Screws or nails: Use appropriate fasteners to fix the timber boards together.

2. Measure and mark the template:

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- Measure the dimensions of the archway opening and determine the desired shape and size of the arch soffit template.
- Transfer the measurements and markings onto the timber boards using a measuring tape, pencil, and straightedge.

3. Cut the timber boards:

- Use a circular saw or jigsaw to cut the timber boards according to the marked measurements.
- Take care to follow the lines accurately to ensure the desired shape of the arch soffit template.

4. Assemble the template:

- Align the cut timber boards to form the desired arch shape.
- Attach the boards together using screws or nails. Ensure they are firmly fixed to maintain the shape of the template.

5. Test the template:

- Position the timber arch soffit template within the archway to ensure it fits correctly.
- Make any necessary adjustments to the template if it doesn't fit properly.

6. Fix the template:

- Once you're satisfied with the fit, fix the timber arch soffit template in place using screws or nails.
- Ensure the template is securely fastened to prevent any movement during the pre-cast molding process.

3.4 Decorative molding

Decorative molding, also known as trim or moulding, refers to a type of architectural element used to enhance the aesthetic appeal and decorative character of a space. It is typically installed along the edges, corners, or surfaces of walls, ceilings, doors, windows, or furniture.

Decorative molding comes in a variety of shapes, sizes, and profiles, allowing for customization and the creation of different visual effects. It can be made from various materials, including

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wood, plaster, polyurethane, composite materials, or even metal, depending on the desired style and application.

The primary purpose of decorative molding is to add detail, elegance, and visual interest to a space. It can be used to create transitions, define architectural features, conceal joints or gaps, or simply serve as an ornamental element. Decorative molding can range from simple, clean lines to intricate and elaborate designs, depending on the desired aesthetic and architectural style.

Decorative molding is a popular architectural element used to enhance the visual appeal of interior and exterior spaces. It can be applied to walls, ceilings, doors, windows, furniture, and other surfaces to add character, elegance, and a sense of craftsmanship.

There are some common types of decorative molding:

- Crown molding
- Baseboard molding
- Chair rail molding
- Panel molding and
- Picture rail molding.



Fig 3.6 Decorative moldings application

Crown Molding:

- Crown molding is installed at the junction between walls and ceilings. It adds a decorative touch and can help create a smooth transition between different surfaces.

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Crown molding comes in various profiles and sizes, allowing you to choose a style that suits your aesthetic preferences.

Baseboard Molding:

- Baseboard molding, also known as skirting board, is installed at the bottom of walls where they meet the floor. It provides a finished look and protects the wall from scuffs and damage. Baseboard molding comes in different heights and styles, allowing you to match it to the overall design of the space.

Chair Rail Molding:

- Chair rail molding is typically installed horizontally on walls, running at a height of around 30 to 36 inches from the floor. It serves both a decorative and practical purpose, acting as a visual divide between different wall treatments and protecting the walls from furniture damage.

Panel Molding:

- Panel molding is used to create decorative wall panels or wainscoting. It can be installed in rectangular or square patterns, adding depth and visual interest to walls. Panel molding can be combined with other types of molding, such as chair rail or crown molding, to create more elaborate designs.

Picture Rail Molding:

- Picture rail molding is installed horizontally along walls, typically around mid-height. It is designed to hold picture hooks or wires, allowing for the easy hanging and rearranging of artwork without damaging the walls.

Decorative Accents:

- In addition to the main types of molding, there are various decorative accents available, such as rosettes, medallions, corbels, and brackets. These elements can be used to enhance the overall design and add ornamental details to moldings or architectural features.

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To fix and fill decorative molding, you'll need the following tools and materials:

Tools:

1. Putty knife
2. Sandpaper (medium and fine grit)
3. Paintbrush
4. Utility knife or chisel (if necessary)
5. Wood glue
6. Clamps (if necessary)

Materials:

1. Wood filler or epoxy
2. Matching paint or stain
3. Clean cloth or sponge
4. Cleaning solution (if necessary)

There's a step-by-step guide to help you through the process:

1. Assess the damage:

- Examine the decorative molding to identify any cracks, chips, or missing pieces that need to be fixed.

2. Clean the area:

- Use a clean cloth or sponge and a mild cleaning solution to clean the damaged area. Remove any dirt, dust, or debris. Let it dry completely before proceeding.

3. Repair cracks and chips:

- For small cracks and chips: Apply wood filler or epoxy to the damaged area using a putty knife. Fill in the crack or chip and smooth it out with the knife. Remove any excess filler. Allow it to dry according to the manufacturer's instructions.
- For larger cracks or missing pieces: If the damage is extensive, you may need to use a utility knife or chisel to remove any loose or damaged sections. Cut the damaged area until you reach stable wood. Clean the area and remove any debris. Apply wood glue to the damaged area and fit a matching piece of wood in place. Secure it with clamps if necessary. Let the glue dry completely.

4. Sand the repaired area:

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- Once the filler or glue has dried, use medium-grit sandpaper to smooth the repaired area. Sand in a gentle, circular motion until the surface is even with the surrounding molding. Then, switch to fine-grit sandpaper to achieve a smooth finish.

5 Clean the area:

- Wipe away any dust or debris resulting from sanding. Use a clean cloth or sponge to ensure a clean surface.

6. Apply paint or stain:

- If necessary, apply a matching paint or stain to the repaired area. Use a small paintbrush to carefully match the color and finish of the existing molding. Allow the paint or stain to dry completely.

7. Finishing touches:

- Inspect the repaired area for any imperfections. If needed, repeat the sanding and painting process until you achieve a seamless integration between the repaired section and the rest of the molding.

3.5 Arch finishing

Arch finishing, also known as architrave or trim refers to the decorative molding or framing that surrounds an arched opening, such as a doorway or window. It is used to add architectural style and elegance to the opening while providing a transition between the wall and the arch.

Arch finishing can be made from various materials, including wood, plaster, or synthetic materials like polyurethane. The design of the architrave can vary widely, ranging from simple and streamlined to intricate and ornate, depending on the desired aesthetic.

Arch finishing is the process of applying a final surface treatment to an archway. This can be done for a variety of reasons, including to:

- Protect the arch from the elements
- Improve the appearance of the archway
- Make the archway easier to clean and maintain

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Arch finishing is the process of applying a final surface treatment to an archway. This can be done for a variety of reasons, including to:

- Protect the arch from the elements
- Improve the appearance of the archway
- Make the archway easier to clean and maintain

Arch finishing can be applied to both interior and exterior archways. It is important to choose the right finishing material for the specific application, taking into account the climate, the type of arch, and the desired aesthetic.

Some common arch finishing materials include:

- Paint
- Stain
- Varnish
- Tile
- Brick
- Stone
- Metal



Fig 3.7 kinds of arch finishing

To install arch finishing, the following steps are typically involved:

1. Measure and cut the architrave:

- Measure the dimensions of the arch and cut the architrave pieces accordingly. The architrave usually consists of a horizontal piece (the head) and two vertical pieces (the jambs) that frame the sides of the arch.

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2. Fit the head piece:

- Position the head piece above the arch and secure it to the wall using nails, screws, or adhesive. Make sure it is level and centered.

3. Install the jamb pieces:

- Attach the jamb pieces vertically along the sides of the arch, aligning them with the head piece. Secure them to the wall in the same manner as the head piece.

4. Fill gaps and seams:

- Use wood filler, caulk, or putty to fill any gaps or seams between the architrave pieces and the wall. Smooth out the filler or caulk with a putty knife or your finger.

5. Sand and finish:

- Once the filler or caulk is dry, sand the architrave to ensure a smooth and even surface. Then, apply paint or stain to match the desired color and finish of the surrounding area. Allow the paint or stain to dry completely.

6. Final touches:

- Inspect the arch finishing for any imperfections and make any necessary touch-ups. Clean the area and remove any debris.

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Self-check-3

Name..... ID..... Date.....

Part I: True or False question

I. Instruction: Say true if the statement is correct and false if the statement is incorrect.

1. Pre-cast molded archways are made in a factory and then transported to the construction site for installation.
2. Pre-cast molded archways are generally more expensive than traditional archways built from scratch.
3. Pre-cast molded archways can be installed quickly and easily, with minimal disruption to your home or business.

Part II: Matching

Instruction: Match the following characteristics with their corresponding type

- | <u>A</u> | <u>B</u> |
|--|--------------------------------|
| 1 Made using concrete molds | A. Manufacturing Process |
| 2 Customizable to fit specific architectural designs | B. Design Flexibility |
| 3 Lightweight and easy to handle | C. Weight and Handling |
| 4 Available in standard sizes and shapes | D. Size and Shape Availability |
| 5 Require on-site casting and curing | E. On-site Requirements |
| 6 Suitable for both interior and exterior applications | F. Application Range |
| 7 Load-bearing capabilities | G. Load-bearing Capacity |

Part III: Short Answer Questions

- What are pre-cast molded archways?
- What materials are used in the production of pre-cast molded archways?
- What are the advantages of using pre-cast molded archways?
- How are pre-cast molded archways installed?

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- What are some common applications for pre-cast molded archways?

Operation sheet-2

Operation Title:

- Fix and install pre-cast molded archways

Purpose:

- To provide a structural and design element that can enhance the appearance of a building while also serving as a functional component.

Precautions:

- Site Preparation
- Handling and Transportation
- Alignment and Leveling
- Anchoring and Jointing
- Weather Considerations
- Sealing and Waterproofing

Tools and materials

- Measuring tape
- Level
- Chalk line
- Hammer
- Screw driver
- Power drill
- Masonry
- Saw
- Trowel
- Caulking Gun
- Pre-cast molded archway
- Mortar or adhesive
- Nails or screws
- Anchors
- Shims
- Grout
- Caulk

Procedure:-

1. Site Preparation
2. Foundation Construction
3. Archway Placement
4. Anchoring
5. Finishing Touches

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Quality criteria:

- These criteria ensure that the archways are properly installed, structurally sound, and aesthetically pleasing, Proper Alignment, Proper Sealing, Compliance with Standards and Codes.

Unit Four: Install plaster paneled ceiling

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

- Ceiling battens
- Panel on ceiling
- Finish joints

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, the trainee will be able to:

- Position and spacing ceiling battens
- Leveled, lined up and fasten panel on ceiling
- Finish joints

4.1 Ceiling battens

Ceiling battens, also known as furring channels or ceiling joists, are horizontal strips of wood or metal that are attached to the underside of ceiling joists to provide a surface for fixing ceiling boards, insulation, and other services. They are typically spaced at 400mm or 600mm intervals, depending on the type of ceiling board being used.

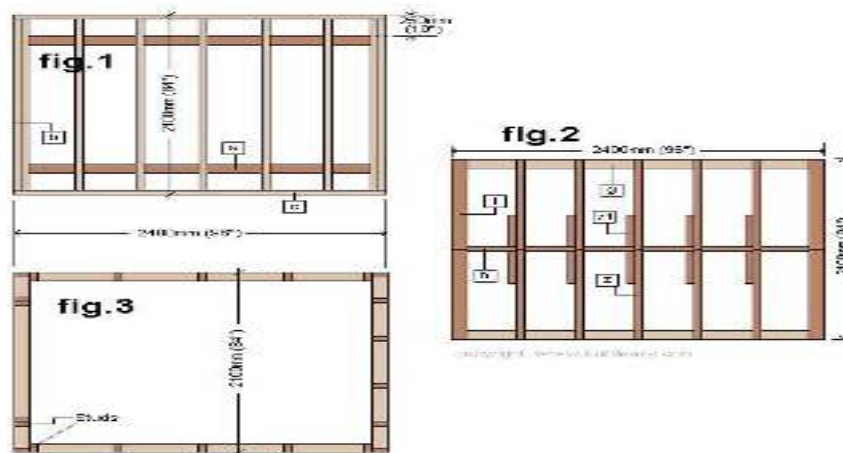


Fig 4.1 plan of battens



Fig 4.2 Application of Ceiling battens

Ceiling battens can be made from a variety of materials, including:

- **Timber:** Timber battens are the most common type of ceiling batten and are typically made from softwood such as pine or spruce. They are relatively inexpensive and easy to work with, but they can be susceptible to warping and twisting over time.

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- **Steel:** Steel battens are more durable than timber battens and are less likely to warp or twist. However, they are also more expensive and more difficult to work with.
- **Aluminium:** Aluminium battens are a lightweight and durable alternative to timber and steel battens. They are also resistant to corrosion and fire.

Ceiling battens play an important role in the construction of ceilings, as they provide a strong and level surface for fixing ceiling boards. They also help to support the weight of the ceiling and its contents.

Benefits of using ceiling battens:

- They provide a strong and level surface for fixing ceiling boards.
- They help to support the weight of the ceiling and its contents.
- They can create a space for insulation, wiring, and other services.
- They can help to improve the acoustic performance of a room.
- They can be used to create a variety of ceiling designs, such as suspended ceilings and tray ceilings.

When choosing ceiling battens, it is important to consider the following factors:

- The type of ceiling board you are using.
- The weight of the ceiling and its contents.
- The desired aesthetic.

The position and spacing of ceiling battens can vary depending on the specific requirements of the project, local building codes, and the type of ceiling material being used. They are typically spaced at 400mm or 600mm intervals, depending on the type of ceiling board being used.

Specifications for ceiling battens can vary depending on the specific project requirements, local building codes, and the type of ceiling material being used.

General specifications that is commonly included:

Material:

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- Specify the type of material for the ceiling battens, such as wood (e.g., treated lumber, plywood) or metal (e.g., steel, aluminum). If using metal battens, you may also specify the gauge or thickness.

Dimensions:

- Provide the dimensions for the battens, including width, depth, and length. These dimensions will depend on the specific project requirements and the structural needs of the ceiling.

Spacing:

- Specify the spacing between the battens. This is typically measured on-center, indicating the distance between the centers of adjacent battens. Common spacing options are 16 inches or 24 inches, but the exact spacing will depend on factors such as the weight of the ceiling material and local building codes.

Fasteners:

- Specify the type and size of fasteners to be used for attaching the battens to the structural ceiling. This can include screws, nails, or other appropriate fasteners. It's important to ensure that the chosen fasteners are suitable for the selected material and can provide sufficient strength and stability.

5. Support Requirements:

- If additional support or framing is required for the ceiling battens, specify any necessary structural elements, such as blocking or additional joists.

Surface Preparation:

- If any surface preparation is needed for the battens, such as priming or sealing, include those specifications.

Code Compliance:

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- Ensure that the specifications comply with local building codes and regulations. This includes any requirements for fire resistance, moisture resistance, or other relevant factors.

Industry Standards:

- Specify any applicable industry standards or guidelines that should be followed during the installation of the ceiling battens.

Material requirements for ceiling battens

Calculating the material requirements for ceiling battens involves determining the quantity of battens needed based on the dimensions of the ceiling area and the desired spacing between the battens.

There's a step-by-step guide to help you with the calculation:

1. Measure the Ceiling Area:

- Measure the length and width of the ceiling area in linear feet or meters. For irregularly shaped ceilings, break it down into smaller sections and measure each section separately.

2. Determine Spacing:

- Decide on the spacing between the battens based on your project requirements, local building codes, and the weight of the ceiling material. Common spacing options are 16 inches or 24 inches on-center. Convert the spacing to linear feet or meters.

3. Calculate the Number of Battens:

- Divide the length of the ceiling area by the spacing to determine the number of battens required for one row. Round up to the nearest whole number.
- Number of Battens per Row = Ceiling Length / Spacing

4. Determine the Number of Rows:

- Divide the width of the ceiling area by the spacing to determine the number of rows of battens needed. Round up to the nearest whole number.
- Number of Rows = Ceiling Width / Spacing

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5. Calculate the Total Number of Battens:

- Multiply the number of battens per row by the number of rows to get the total number of battens needed.
- Total Number of Battens = Number of Battens per Row × Number of Rows

Add Extra Battens:

- It's a good practice to add a few extra battens to account for any waste, cutting errors, or future repairs. The number of extra battens may vary depending on the project, but adding 5-10% to the total number is typically sufficient.
- Total Number of Battens (including extra) = Total Number of Battens + (Total Number of Battens × Extra Percentage)

7. Round Up:

- Round up the total number of battens to the nearest whole number since battens are typically sold in whole units.

4.2 Panel on ceiling

Ceiling panels are a type of material that is used to cover the overhead surface of a room or space. They can serve various purposes, including providing insulation, improving acoustics, enhancing aesthetics, or hiding structural elements. Ceiling panels come in different materials, styles, and sizes to suit different needs and design preferences.

To level, line up, and fasten a panel on the ceiling, you will need the following tools and materials:

- A spirit level
- A tape measure
- A pencil
- A screwdriver
- Drill
- Screws or nails

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- Shims (optional)

When leveling, lining up, and fastening panels on a ceiling, consider the following steps:

1. Prepare the Ceiling:

- Ensure that the ceiling surface is clean, dry, and free from any debris or obstructions. If necessary, remove any existing ceiling material or fixtures.

2. Establish the Reference Line:

- Determine the desired height or level of the ceiling panels. Use a measuring tape and a level to establish a reference line along the perimeter of the ceiling. This reference line will serve as a guide for aligning and leveling the panels.

3. Measure and Cut Panels:

- Measure the dimensions of the ceiling area and cut the panels accordingly. It's important to follow the manufacturer's instructions for cutting and handling the specific type of ceiling panels being used.

4. Align the First Panel:

- Start at a corner of the ceiling and align the first panel with the reference line. Ensure that the panel is square to the walls or the room's geometry if necessary. Use a level to check for any discrepancies and make adjustments as needed.

5. Fasten the First Panel:

- Secure the first panel to the ceiling using appropriate fasteners. The type of fasteners will depend on the material of the ceiling panels. For example, if using drywall panels, use drywall screws or nails. Follow any specific guidelines provided by the manufacturer.

6. Installation Method:

- **Acoustic Panels:** Acoustic panels are typically installed using adhesive or mounting clips. Apply the adhesive to the back of the panel or attach the mounting clips according to the manufacturer's instructions. Press the panel firmly against the ceiling surface, ensuring it aligns with the reference lines or grid pattern.

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- **Drywall Panels:** Drywall panels are commonly installed by attaching them to the ceiling joists or using a suspended ceiling grid system. Cut the drywall panels to fit the ceiling dimensions and install them using drywall screws or nails. Follow the appropriate fastening pattern, typically placing fasteners every 12 to 16 inches along the edges and every 16 to 24 inches in the field of the panel.
- **Decorative Panels:** Decorative panels may have specific installation methods depending on their design and material. Follow the manufacturer's instructions for the recommended installation process. It may involve using adhesive, clips, or mechanical fasteners.

7. Check for Level and Alignment:

- Regularly check for levelness and alignment as you progress with panel installation. Adjust as necessary to ensure a uniform and visually pleasing result.

8. Trim and Finish:

- Trim the panels as needed to fit around any obstructions such as vents, light fixtures, or electrical outlets. Use appropriate tools, such as a utility knife or saw, to make accurate cuts. Once all the panels are installed, finish the edges with trim or molding for a polished look.

Additional tips for leveling, lining up, and fastening a panel on the ceiling:

- If you are installing multiple panels, make sure to leave a small gap between each panel. This will allow for expansion and contraction of the panels.
- If you are installing a heavy panel, you may need to use additional support, such as a joist hanger.
- Be careful not to over tighten the screws or nails, as this can damage the panel.



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Fig 4.3 application of Panel on ceiling

4.3 Finish joints

When it comes to finishing the joints on a plaster paneled ceiling, there are a few different methods and materials you can use.

To achieve a smooth and professional jointing finish for a plaster paneled ceiling, you will need the following tools and materials:

- Joint compound
- Joint tape
- Joint knife
- Sandpaper
- Primer
- Paint



Fig 4.4 Application of Panel on wall and ceiling

Instructions:

1. Prepare the surface: Make sure that the ceiling is clean and dry. Remove any loose plaster or debris.
2. Apply joint compound to the joints: Use a joint knife to apply a thin coat of joint compound to the joints between the plaster panels. Make sure that the joint compound is flush with the surface of the panels.
3. Embed joint tape in the joint compound: Place a strip of joint tape over the joint and press it into the joint compound. Use the joint knife to smooth out the joint compound over the tape.

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4. Apply a second coat of joint compound: Apply a second coat of joint compound over the joint tape. Make sure that the joint compound is flush with the surface of the panels.
5. Sand the joints: Once the joint compound has dried, sand the joints smooth using a medium-grit sandpaper.
6. Prime and paint the ceiling: Prime the ceiling with a high-quality primer. Once the primer has dried, paint the ceiling with a high-quality paint.

There are the steps for applying a jointing finish to achieve a smooth and seamless look:

Prepare the Surface:

- Ensure that the plaster panels are clean and free from any dust, debris, or loose material. Use a brush or vacuum to remove any dirt or particles from the joints, as well as the surrounding areas.

Apply a Jointing Compound:

- Use a jointing compound specifically designed for plaster or drywall applications. There are different types of jointing compounds available, such as ready-mixed or powder-based compounds.

Fill the Joints:

- Using a putty knife or a jointing knife, apply the jointing compound over the joints between the plaster panels. Press the compound firmly into the joints, ensuring they are completely filled. Smooth the compound as much as possible to create a flush surface.

Embed Joint Tape:

- For added strength and stability, embed joint tape into the wet jointing compound. Joint tape is a self-adhesive mesh tape that helps prevent cracks from forming in the joints over time. Place the joint tape over the filled joint, pressing it into the compound with a putty knife or jointing knife.

Apply Multiple Layers:

- Depending on the size and depth of the joints, you may need to apply multiple layers of jointing compound. Allow each layer to dry completely before applying the next one. Follow the manufacturer's instructions for the drying time of the specific jointing compound you are using.

Feather the Edges:

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- As you apply subsequent layers of jointing compound, gradually feather the edges of the compound to create a smooth transition between the joint and the surrounding plaster panels. This will help to blend the joint with the rest of the ceiling surface.

Sanding and Finishing:

- Once the jointing compound is completely dry, use fine-grit sandpaper or a sanding block to smooth the surface of the joint. Be careful not to sand too aggressively, as you don't want to damage the surrounding plaster panels. Wipe away any dust or residue.

Prime and Paint:

After sanding, apply a coat of primer to the jointed areas to create an even surface for paint adhesion. Once the primer is dry, you can proceed with painting the entire ceiling to achieve the desired finish.

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	Written test
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Self-Check 4

Name..... ID..... Date.....

Part I: True or False question

I. Instruction: Say true if the statement is correct and false if the statement is incorrect.

1. Plaster paneled ceilings can be installed in both residential and commercial buildings.
2. Plaster paneled ceilings are a cost-effective option compared to other decorative ceiling materials such as wood or metal.
3. Plaster paneled ceilings provide a durable and long-lasting solution for ceiling installations.

Part II: Matching

Instruction: Match the following characteristics with their corresponding type

- | | <u>A</u> | <u>B</u> | |
|---|-----------------|--|--|
| 1 | Plasterboard | A. The process of applying paint to the plaster paneled ceiling after installation. | |
| 2 | Metal framework | B. Professionals with expertise and experience in installing plaster paneled ceilings. | |
| 3 | Soundproofing | C. The use of metal supports and framing to hold the plaster panels in place. | |
| 4 | Cracking | D. The tendency of the plaster paneled ceiling to develop cracks | |

over time.

Part III: Short Answer Questions

1. What materials are typically used for plaster paneled ceiling installation?
2. What are the key steps involved in installing a plaster paneled ceiling?
3. How can cracking in plaster paneled ceilings be prevented or minimized?
4. How can regular maintenance contribute to the longevity of a plaster paneled ceiling?
5. Can plaster paneled ceilings be combined with other ceiling materials for a unique look?

Operation sheet-3

Operation Title:

- Install plaster paneled ceiling

Purpose:

- To improve the appearance of a room
- To conceal imperfections in the ceiling
- To improve the insulation of a room
- To reduce noise levels in a room
- To protect the ceiling from damage

Precautions:

- Wear safety gear
- Use the right tools and materials
- Follow the manufacturer's instructions
- Be careful not to damage the existing ceiling
- Make sure the ceiling is properly supported
- Allow the plaster to dry completely before painting it

Tools and materials

- Safety glasses
- Dust mask

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- Gloves
- Level
- Measuring tape
- Pencil
- Utility knife
- Saw
- Drill
- Screwdriver
- Plasterboard lifter (optional)
- Safety ladder
- Joint compound
- Sandpaper
- Primer
- Paint
- Plaster panels
- Plasterboard screws
- Plasterboard tape

Procedure:-

1. Prepare the work area. Remove any furniture or other objects from the room. Cover the floor and walls with drop cloths.
2. Measure the ceiling and mark the location of the plaster panels. Use a level to make sure that the lines are straight.
3. Cut the plaster panels to size. Use a utility knife or saw to make straight cuts. Be careful not to damage the plaster panels.
4. Attach the plaster panels to the ceiling. Use plasterboard screws to attach the panels to the joists. Be sure to space the screws evenly.
5. Tape and joint the plaster panels. Use plasterboard tape to cover the seams between the panels. Apply a thin coat of joint compound over the tape and let it dry.
6. Sand the joint compound. Once the joint compound is dry, sand it smooth.
7. Prime and paint the ceiling. Apply a primer to the ceiling to help the paint adhere better. Once the primer is dry, paint the ceiling with your desired color of paint.

Quality criteria: At the end of this operation customer satisfaction and improvement of the

Work progress.

- The plaster panels should be properly attached to the ceiling joists.
- The seams between the plaster panels should be properly taped and jointed.
- The joint compound should be sanded smooth.

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- The ceiling should be primed and painted properly.

Unit Five: Install ornamental moldings

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

- Measure and cut decorative molds
- Fix decorative molds
- Finish decorative molds based

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, the trainee will be able to:

- Measure and cut decorative molds
- Fix decorative molds
- Finish decorative molds based

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5.1 Measure and cut decorative molds

Tools and materials needed:

- Measuring tape or ruler
- Pencil or marker
- Decorative mold material (e.g., foam, wood, plastic)
- Utility knife or a suitable cutting tool
- Safety goggles and gloves (for protection)
- Safety glasses
- Dust mask

To measure and cut decorative molds, you will need a few tools and materials. There's a step-by-step guide to help you:

Step 1: Design and plan

- Decide on the design and size of your decorative mold. Sketch it out on paper to visualize the dimensions and details. This will help you determine the measurements you need to take.

Step 2: Measure the dimensions

- Using a measuring tape or ruler, measure the length, width, and height of the decorative mold you want to create. Take accurate measurements and note them down.

Step 3: Transfer measurements

- Take your decorative mold material (e.g., foam, wood, plastic) and mark the measurements directly onto it. Use a pencil or marker to make clear and visible lines.

Step 4: Cut the mold material

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- Put on your safety goggles and gloves for protection. Using a utility knife or a suitable cutting tool carefully cut along the marked lines on the mold material. Apply steady and controlled pressure while cutting to ensure clean and precise edges.

Step 5: Refine the shape

- Once you have cut the basic shape, you can further refine and shape the decorative mold as desired. Use the cutting tool or other shaping tools such as sandpaper, files, or rasps to smooth out any rough edges or add intricate details.

Step 6: Test and adjust

- After cutting and shaping the decorative mold, check its fit and appearance. Make any necessary adjustments or modifications to achieve the desired result.

5.2 Fix decorative molds

Fixing decorative molds typically involves addressing any issues or damages to restore their functionality and appearance.

The general steps to fix decorative molds are:

1. Clean the molds:

- Start by cleaning the molds thoroughly with mild soap and warm water. Remove any dirt, dust, or debris that may be on the surface. Dry the molds completely before proceeding.

2. Assess the damage:

- Examine the molds closely to identify the type and extent of the damage. Common issues include cracks, chips, or breaks. Understanding the specific problem will help you determine the appropriate repair method.

3. Repair cracks or chips:

- **For small cracks or chips:**

- ✓ Apply a clear epoxy adhesive to the damaged area.
- ✓ Use a toothpick or a small brush to spread the adhesive evenly.
- ✓ Press the sides of the crack or chip together gently to ensure a tight bond.
- ✓ Allow the epoxy to cure as per the manufacturer's instructions.

- **For larger cracks or breaks:**

- ✓ Consider using a two-part epoxy putty or a moldable resin.

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- ✓ Mix the components according to the instructions provided and apply the putty or resin to fill the crack or rebuild the broken section.
- ✓ Shape and smooth the putty or resin to match the surrounding mold.
- ✓ Allow it to cure completely.

4. Apply the adhesive or filler:

- Carefully apply the adhesive or filler to the cracked or chipped areas. Ensure that it fills the damaged portion completely and adheres firmly.

5. Smooth the surface:

- Use a suitable tool such as a putty knife or sandpaper to smooth out the repaired area. This will help blend the repaired section with the rest of the mold and create a seamless appearance.

6. Allow for curing or drying:

- Follow the recommended curing or drying time mentioned on the adhesive or filler product. This will ensure that the repair sets properly.

7. Finishing touches:

- Once the repaired area is fully cured or dried, you can further refine the appearance by sanding or polishing the surface. This will help achieve a smooth and uniform finish.

5.3 Finish decorative molds

The term "finish decorative molds" refers to the process of completing or enhancing the appearance of decorative molds. It involves the final steps taken to refine and beautify the molded objects produced from the molds. This can include actions such as cleaning, sanding, painting, sealing, or applying other finishes to achieve the desired aesthetic appeal.

The steps to finish decorative molds are:

1. Clean the molds:

- Ensure that the molds are clean and free from any dust or debris. Use mild soap and water to wash them, and let them dry completely before proceeding.

2. Apply a release agent:

- Depending on the material of the molds and the casting material you plan to use, it may be necessary to apply a release agent to prevent the casting material from sticking to the molds. Follow the instructions provided with the specific release agent you are using.

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3. Mix the casting material:

- Prepare the casting material according to the manufacturer's instructions. This could be plaster, resin, concrete, or any other suitable material for your molds.

4. Pour the casting material:

- Carefully pour the prepared casting material into the molds. Take care to fill the molds evenly and avoid any air bubbles. Use a vibrating tool or gently tap the molds to help release any trapped air bubbles.

5. Allow curing or drying:

- Follow the recommended curing or drying time for the specific casting material you are using. This could range from a few hours to several days, depending on the material.

6. Demold the finished pieces:

- Once the casting material has fully cured or dried, gently remove the finished pieces from the molds. Take your time and be careful not to damage the details of the molds or the castings.

7. Clean up any imperfections:

- Inspect the finished pieces for any imperfections like rough edges, seams, or excess material. Use sandpaper, a file, or other appropriate tools to smooth out these imperfections and achieve the desired finish.

8. Apply a sealer or finish:

- Depending on the type of material and the desired look, you may choose to apply a sealer, paint, or other finish to the castings. This can enhance their appearance, provide protection, or add color. Select a sealer or finish that is suitable for the specific material you are working with.

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Self-Check 5

Name..... ID..... Date.....

Part I: True or False question

I. Instruction: Say true if the statement is correct and false if the statement is incorrect.

1. Ornamental moldings are primarily used for decorative purposes in interior design.
2. Ornamental moldings can be made from materials such as wood, plaster, or polyurethane.
3. Ornamental moldings are commonly used in both residential and commercial settings.

Part II: Matching

Instruction: Match the following characteristics with their corresponding type

- | <u>A</u> | <u>B</u> |
|---------------------|--|
| 1 Crown molding | A. Molding installed along the top portion of a wall where it meets the ceiling. |
| 2 Chair rail | B. Molding installed at the midpoint of a wall, typically at chair height, to protect the wall from chairs and add visual interest. |
| 3 Baseboard molding | C. Molding installed along the bottom portion of a wall where it meets the floor. |
| 4 Adhesive | D. A substance used to secure ornamental moldings to the wall. |
| 5 Decorative | E. Specialty moldings used to create decorative corners or joints in |

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- Hammer
- Utility knife
- Ornamental moldings
- Adhesive (for lightweight moldings)
- Nails or screws (for heavier moldings)
- Caulk gun
- Caulk (for filling gaps and seams)
- Sandpaper
- Primer
- Paint

Procedure:-

1. Prepare the work area. Remove any furniture or other objects from the room. Cover the floor and walls with drop cloths.
2. Measure and mark the location of the moldings. Use a level to make sure that the lines are straight.
3. Cut the moldings to size. Use a miter saw or jigsaw to make straight cuts. Be careful not to damage the moldings.
4. Attach the moldings to the wall or ceiling. Use adhesive or nails/screws to attach the moldings. Be sure to space the fasteners evenly.
5. Fill any gaps and seams with caulk. Use a caulk gun to apply the caulk and then smooth it out with your finger or a caulking tool.
6. Sand the moldings and caulk. Once the caulk is dry, sand it smooth. You may also want to sand the moldings to prepare them for painting.
7. Prime and paint the moldings. Apply a primer to the moldings to help the paint adhere better. Once the primer is dry, paint the moldings with your desired color of paint.

Quality criteria: At the end of this operation customer satisfaction and improvement of the Work progress.

- Wood moldings should be made from a high-quality hardwood, such as oak, maple, or cherry.
- The wood should be free from defects, such as knots, cracks, and splits.
- Plaster moldings should be made from a high-quality plaster of Paris.
- The plaster should be smooth and free from imperfections.

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- Polyurethane moldings are a lightweight and durable alternative to wood and plaster moldings. Polyurethane moldings should be free from defects, such as bubbles, cracks, and seams.

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