



Skill India
कौशल भारत - कुशल भारत



सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP



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National
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Transforming the skill landscape



Facilitator Guide



Sector
Construction

Sub-Sector
Real Estate and Infrastructure Construction

Occupation
Masonry

Reference ID: **CON/Q0101, Version 4.0**
NSQF Level: 2

Helper Mason



Shri Narendra Modi
Prime Minister of India

“ Skilling is building a better India.
If we have to move India towards
development then Skill Development
should be our mission. ”

Acknowledgement

We are thankful to all organizations and individuals who have helped us in the preparation of this Facilitator Guide. We also wish to extend our gratitude to all those who reviewed the content and provided valuable inputs for improving the quality, coherence and content presentation of chapters. This Facilitator Guide will lead to the successful rollout of the skill development initiatives, helping greatly our stakeholders particularly trainees, trainers and assessors etc. We are thankful to our Subject Matter Expert for the content and for helping us in the preparation of this Facilitator Guide.

It is expected that this publication would meet the complete requirements of QP/NOS based training delivery. We welcome suggestions from users, industry experts and other stakeholders for any improvement in future.

About the Book

The objective of the guide is to provide an approach map for interacting with the trainees undergoing training in this job role. The course aims to provide both theoretical and practical knowledge to the trainees and also to guide them about Helper Mason. The guide is neither a substitute nor a complete road map, but an aid to help to pass on the knowledge on all the aspects to the trainees in a systematic manner. It is expected that the trainer is fully conversant with all the contents of the guide. The guide is just to indicate how to proceed in covering a topic and includes some additional information that may be necessary for the trainer to develop better comprehension of the following aspects:

- **Knowledge and Understanding:** Satisfactory operational learning and comprehension to play out the required chore.
- **Performance Criteria:** Pick up the required aptitudes through hands-on preparation and play out the required operations inside the predetermined measures.
- **Professional Skills:** Capacity to settle on operational choices relating to the zone of work.

The job will also include judging comprehension and also help them learn more through hands-on training. But it has to be ensured that these are following the knowledge imparted and time spent on each unit. It is expected that irrespective of the region, knowledge of all aspects will be imparted to trainees.

Symbols Used



Ask



Activity



Do



Demonstrate



Elaborate



Exercise



Facilitation Notes



Field Visit



Learning Outcomes



Notes



Objectives



Tips



Resources



Summarize



Say



Team Activity



Explain



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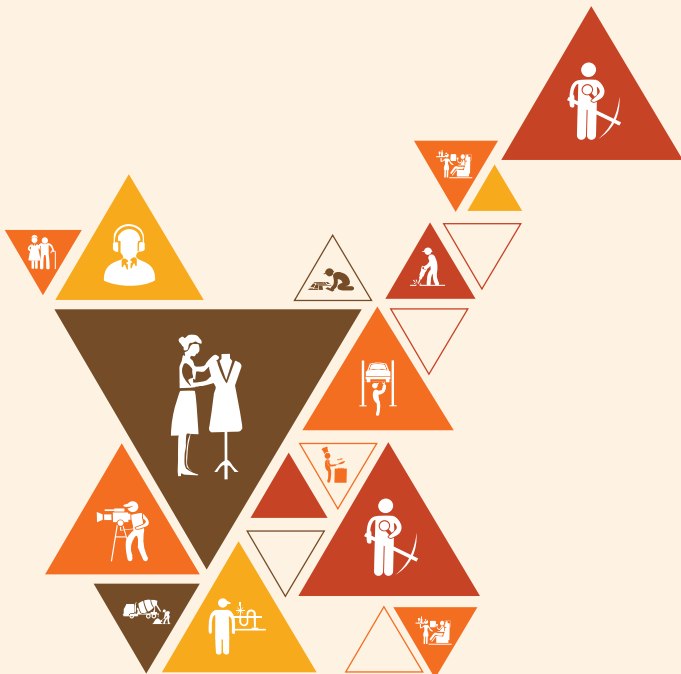


1. Introduction of construction Sector and Job Role

Unit 1.1 - Objectives of the Training Program

Unit 1.2 - Introduction to Construction Industry in India

Unit 1.3 - Brief about Masonry Occupation



Bridge Module

Key Learning Outcomes

After the end of this module, participants will be able to:

1. Explain the overview and objective of the training program
2. Discuss about the construction sector and its sub-sectors in India
3. Summarize the key job roles in the construction sector
4. Describe the employment opportunities in construction sector
5. Define the masonry work
6. Discuss the job description of a Helper Mason
7. Describe the responsibilities of a Helper Mason
8. List down the essential knowledge and skills required for the job of a Helper Mason
9. Discuss the career progression of a Helper Mason

Unit 1.1: Objectives of the Training Program

Unit Objectives

After the end of this unit, participants will be able to:

1. Understand the purpose of training
2. Recognize the benefits of training

Say

- Welcome and greet the participants.

Resources to be used

- Theory
 - Training Kit - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.

Say

- Let's begin with an ice-breaking session, introduce yourself and ask participants to introduce themselves.

Team Activity

- **Purpose:** This activity aims to familiarise the participants in the group with one another.
- **Tentative Duration:** 15 Mins
- **Procedure:**
 - Ask the participants to pronounce their name with an adjective beginning with the initial letter of their name.
 - Request that they additionally provide a brief introduction of themselves.
- **Expected Outcome:** The outcome of this activity is that the participants will become familiar with each other.

Do

- Take a paper.
- Draw a rough Electricity generation, transmission, and distribution sketch/outline.

Elaborate

- About the purpose of the activity.
- Ensure every participant to understand the program.
- Encourage participants to ask questions.
- Encourage each participant to explain their activity sheet.
- Help them by giving some hints to identify, if something is missing.
- Some participants may be shy and hesitant, encourage them to speak and share their details.
- When everyone finished introducing themselves, explain the schedule in detail for the day and inform about the break timings.

Notes for facilitation

- Use the Helper Mason PHB and refer unit 1.1 to explain Objectives of the Training Program.
- Helper Masons are essential workers in the construction industry who assist skilled masons and bricklayers with various tasks related to masonry and construction. Their role is crucial in ensuring that construction projects progress smoothly and efficiently.
- Helper Masons play a critical role in supporting the construction of buildings, walls, and other masonry structures. They contribute to the overall efficiency and quality of construction projects by assisting skilled masons in their tasks and ensuring that the work environment is safe and organized. Over time, many Helper Masons gain valuable experience and knowledge that can open up opportunities for career advancement within the construction industry.

Unit 1.2: Introduction to Construction Industry in India

Unit Objectives

At the end of this unit, trainer will ensure that participant will be able to:

1. Explain about construction sector in India
2. Compare urban and rural construction
3. Observe and outline modernization of construction
4. About major occupations in the construction sector

Resources to be used

- **Theory**
 - Training Kit - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video

Explain

Introduction to Major Occupations in Construction Sector:

- About occupation in construction sector.
- Show some examples of construction occupations.
- Describe different type of construction works and occupations applicable accordingly.

Notes for facilitation

- Use the Helper Mason PHB and refer unit 1.2 to explain Construction Industry in India.
- The construction industry in India is a critical driver of economic growth, encompassing various sectors such as real estate, infrastructure, and rural construction. Let's take a closer look at each of these segments:
 - **Real Estate Sector:** The real estate sector in India includes the development of residential, commercial, and industrial properties. It has a substantial impact on urbanization and provides essential spaces for living, working, and recreation. Key Points are:
 - **Residential Properties:** The demand for housing, especially in urban areas, remains high due to rapid urbanization and population growth.
 - **Commercial Properties:** The growth of industries and businesses fuels demand for office spaces, retail outlets, and commercial complexes.

- **Industrial Properties:** As manufacturing and industrial sectors expand, there's a need for well-designed industrial facilities and warehouses.
- **Infrastructure Development:** India's focus on infrastructure development is crucial for economic progress and improving the quality of life for its citizens. Key Points are:
 - **Transportation:** Roadways, highways, railways, airports, and ports are being developed to improve connectivity.
 - **Energy:** Investment in power plants and renewable energy projects is essential for meeting the energy needs of a growing economy.
 - **Urban Development:** The "Smart Cities Mission" aims to create sustainable and efficient urban centers.
- Rural construction focuses on developing infrastructure and facilities in rural areas to bridge the urban-rural divide and improve the living standards of rural communities. Key Points are:
 - **Housing:** Initiatives like "Pradhan Mantri Awas Yojana - Rural" aim to provide affordable housing to rural populations.
 - **Rural Infrastructure:** Building roads, schools, healthcare facilities, and water supply systems enhances rural living conditions.
- The construction sector encompasses a wide range of job opportunities across various occupations. Here are some major occupations in the construction industry along with a few job roles under each occupation:
- **Civil Engineers:** Civil engineers play a key role in designing, planning, and overseeing construction projects. They ensure projects are completed safely, efficiently, and according to specifications.
 - **Structural Engineer:** Designs and analyzes the structural components of buildings and infrastructure projects.
 - **Geotechnical Engineer:** Evaluates soil conditions and provides recommendations for foundation design.
 - **Transportation Engineer:** Designs roads, highways, and transportation systems to ensure smooth mobility.
- **Architects:** Architects are responsible for designing the overall layout, aesthetics, and functionality of buildings and structures.
 - **Residential Architect:** Designs homes and residential buildings, focusing on functionality and aesthetics.
 - **Commercial Architect:** Specializes in designing commercial spaces, offices, and retail complexes.
 - **Landscape Architect:** Plans outdoor spaces, parks, and landscapes within construction projects.
- **Construction Managers:** Construction managers oversee the entire construction process, including

budgeting, scheduling, and coordinating various teams.

- **Project Manager:** Manages all aspects of a construction project, from planning to completion.
- **Site Manager:** Supervises on-site activities, ensuring safety and efficient progress.
- **Estimator:** Calculates project costs and prepares budgets for construction projects.
- **Electricians:** Electricians are responsible for installing and maintaining electrical systems in buildings and structures.
 - **Residential Electrician:** Installs electrical systems in homes and residential complexes.
 - **Commercial Electrician:** Works on electrical installations in commercial buildings and offices.
 - **Industrial Electrician:** Focuses on electrical systems in factories and industrial facilities.
- **Plumbers:** Plumbers install, repair, and maintain water supply and drainage systems in buildings.
 - **Residential Plumber:** Handles plumbing systems in homes and residential buildings.
 - **Commercial Plumber:** Works on plumbing installations in commercial spaces and offices.
 - **Pipefitter:** Installs and maintains pipes in industrial settings.
- **Welders and Fabricators:** Welders and fabricators join and shape metal parts to create structures and components.
 - **Structural Welder:** Welds and assembles metal parts for construction projects.
 - **Pipe Welder:** Specializes in welding pipes for plumbing and industrial systems.
 - **Sheet Metal Fabricator:** Crafts metal components used in construction projects.
- **Surveyors:** Surveyors measure and map out the land, providing crucial data for construction projects.
 - **Land Surveyor:** Measures and defines property boundaries and topography.
 - **Quantity Surveyor:** Estimates materials and costs for construction projects.
 - **Geodetic Surveyor:** Uses advanced techniques to map larger areas and create accurate models.
- **Construction Laborers:** Construction laborers perform various physical tasks on construction sites to support other professionals.
 - **Concrete Worker:** Pours, levels, and finishes concrete for foundations and structures.
 - **Carpenter:** Constructs and installs wooden components in buildings.
 - **Mason:** Lays bricks, stones, and other masonry materials to build structures.
- Each of these major occupations within the construction sector offers a wide range of job opportunities and career paths. From engineering and design to hands-on labor, the construction industry provides diverse roles that contribute to building the world around us.

Say

- Let us now perform an activity based on various market segments of the construction industry.

Team Activity

- **Purpose:** The objective of this activity is to introduce participants to the different market segments within the construction industry.
- **Resources Required:** Presentation materials (slides or handouts) explaining market segments in the construction industry, internet access or library resources for research, whiteboard or flip chart with markers, printed construction industry reports or data (optional but helpful), worksheets for students to complete during the activity.
- **Tentative Duration:** 60-90 minutes
- **Methods/Procedure:**
 - **Step 1: Introduction-** Begin the activity by discussing the importance of understanding market segments in the construction industry. Explain that market segmentation helps professionals identify specialized opportunities and areas of expertise within the broader field of construction.
 - **Step 2: Presentation-** Deliver a presentation on the different market segments within the construction industry. Include information on residential construction, commercial construction, industrial construction, infrastructure development, and specializations like green building, renovation, and restoration. Use visual aids to make the information more engaging and accessible.
 - **Step 3: Group Research-** Divide the students into small groups and assign each group a specific market segment to focus on. Provide the groups with access to the internet or library resources to conduct research on their assigned market segment. They should explore the scope, current trends, major players, challenges, and potential career opportunities within their segment.
 - **Step 4: Group Presentation-** Each group presents their findings to the rest of the class. Encourage them to use visuals, statistics, and examples to support their presentation. Allow for a short Q&A session after each presentation to clarify doubts and exchange insights.
 - **Step 5: Reflection and Discussion-** Lead a class discussion to debrief the activity. Encourage students to share their thoughts on which market segments they find most appealing and why. Discuss the skills and qualifications required for different market segments and how students can prepare to excel in their chosen area.
- **Expected Outcome:** By the end of this classroom activity, students are expected to:
 - Understand the concept of market segmentation in the construction industry.
 - Identify the various market segments within the construction field, including residential, commercial, industrial, infrastructure, and specialized sectors.
 - Analyze the characteristics, opportunities, and challenges associated with each market segment.
 - Gain insights into potential career paths and specialization options within the construction industry.
 - Reflect on their interests and skills to make informed decisions about their vocational course and future career goals in construction.

Unit 1.3: Brief about Masonry Occupation

Unit Objectives

At the end of this unit, trainer will ensure that participant will be able to:

1. Know about role and duties of a helper mason;
2. Know about personal and professional attributes under the helper mason occupation;
3. Understand masonry and its elements.
4. Understand the career progression under masonry occupation

Resources to be used

- **Theory**
 - **Training Kit** - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.

Explain

- Introduction to masonry works in the Construction Sector
- About the possible masonry works that happen at a construction site.
- Show some examples with illustrations of construction masonry works.
- List the important masonry activities that happen often at construction site.

Career Progression Path

- Show and explain the various stages of career progression path.
- List down the important milestones in the progression path.
- Discuss the advantages of the career progression path.

Elaborate

- About the necessity of defining roles and responsibilities.
- List the roles and responsibilities of a Helper Mason in detail.
- Correlate the roles and responsibilities of a Helper Mason.
- About the necessity of personal attributes.
- List the personal attributes of a Helper Mason in detail.
- Correlate the roles, responsibilities and personal attributes of a Helper Mason.
- Show and explain the various stages of career progression path.
- Discuss the advantages of the career progression path.

Notes for facilitation

- Use the Helper Mason PHB and refer unit 1.3 to explain about Masonry Occupation.
- The role of a Helper Mason in the construction industry is to support skilled masons and contribute to the smooth execution of masonry projects. Their responsibilities involve a range of tasks that assist in the construction of various structures using bricks, stones, concrete blocks, and other materials.
- **Here are the typical roles and responsibilities of a Helper Mason:**
- **Material Preparation:**
 - Assist in preparing mortar by mixing cement, sand, and water to the required consistency.
 - Cut bricks, stones, or other materials to the desired size and shape using appropriate tools.
- **Equipment Setup:**
 - Set up scaffolding, ladders, and safety barriers to create a safe and organized work environment.
 - Arrange and transport tools and equipment required for the masonry work.
- **Brick and Material Handling:**
 - Transport bricks, stones, and other construction materials to the work area.
 - Assist skilled masons in lifting and positioning heavy materials accurately.
- **Mortar Application:**
 - Hand over mortar to the skilled mason for laying bricks or stones.
 - Help apply mortar to bricks or stones as directed by the mason.
- **Bricklaying Assistance:**
 - Hand bricks or stones to the skilled mason in the correct order and position for laying.
 - Ensure that the mason has a steady supply of materials during the bricklaying process.
- **Cleaning and Maintenance:**
 - Clean excess mortar, debris, and waste materials from the work area to maintain cleanliness and safety.
 - Keep tools and equipment clean and organized.
- **Following Instructions:**
 - Listen and follow instructions from skilled masons and supervisors to complete tasks accurately.
 - Collaborate with other team members to achieve efficient workflow.
- **Safety Compliance:**

- Adhere to safety protocols and guidelines to prevent accidents and maintain a safe working environment.
- Wear appropriate personal protective equipment (PPE) to ensure personal safety.
- **Learning and Skill Development:**
 - Observe and learn masonry techniques, tools usage, and construction processes from skilled masons.
 - Develop skills in handling tools, materials, and equipment related to masonry.
- **Communication:**
 - Communicate effectively with skilled masons and other team members to coordinate tasks and maintain workflow.
- **Assist in Repairs:**
 - Support skilled masons in repair and maintenance projects, such as fixing cracks or replacing damaged bricks.
- **Maintaining Workspace:**
 - Keep the work area organized and free of obstacles to facilitate smooth operations.
- **Physical Endurance:**
 - Perform physically demanding tasks, such as lifting heavy materials and working in various weather conditions.
- **Teamwork:**
 - Collaborate with skilled masons, laborers, and other construction professionals to achieve project goals.
- Helper Masons play a vital role in the construction industry by providing essential assistance to skilled masons. Through their efforts, they contribute to the successful completion of masonry projects while gaining valuable experience that may lead to career advancement within the construction field.

Say

- Let us now perform an activity based on various career opportunities available for a helper mason.

Activity -1

- **Purpose:** Familiarize participants with diverse employment opportunities for a helper mason, highlighting roles, responsibilities, and potential career paths.
- **Resources Required:** PowerPoint Presentation, Handouts or printouts of job descriptions.

- **Tentative Duration:** 60 Mins
- **Procedure:**
 - Explain the importance of a helper mason in the construction industry.
 - Emphasize the objective of exploring employment opportunities in the industry.
 - Encourage participants to share their initial thoughts on the roles and responsibilities of a helper mason.
 - Provide handouts or printouts of various employment opportunities in the construction industry as per different NSQF Levels.
 - Discuss each opportunity, highlighting roles, responsibilities, and required skills.
 - Divide participants into small groups.
 - Assign each group a specific employment opportunity to discuss key aspects, qualifications, skills, and career progression.
 - Now ask each group to provide a short researched explanation of the opportunity assigned.
 - Summarize key points, emphasizing the range of career paths and the importance of an Assistant Electrician.
- **Expected outcome:** Participants gain awareness of the wide range of employment opportunities in the construction industry, understand the specific roles and responsibilities of a helper mason, and will be inspired to explore potential career paths within the field.

Exercise

Key Solutions to PHB Exercise

- 1) The construction industry encompasses the planning, designing, building, and maintenance of structures such as buildings, infrastructure, roads, bridges, and more. It involves various trades and professionals working together to create physical structures that serve functional, aesthetic, and economic purposes.
- 2) The role of a Helper Mason in the construction industry is to assist skilled masons in various tasks related to masonry work. They support masons by preparing materials, transporting bricks and stones, mixing mortar, cleaning work areas, and performing other tasks that contribute to the efficient execution of construction projects.
- 3) The primary tasks performed by a Helper Mason include:
 - Preparing mortar and materials.
 - Transporting and handling construction materials.
 - Assisting skilled masons in bricklaying and stone masonry.
 - Setting up scaffolding and equipment.
 - Cleaning work areas and tools.
 - Following instructions and safety protocols.
 - Supporting repair and maintenance work.
- 4) Essential skills for a Helper Mason include:
 - Physical strength and stamina.
 - Ability to follow instructions.
 - Basic knowledge of construction materials and tools.
 - Attention to detail.
 - Communication and teamwork skills.
 - Understanding of safety protocols.
 - Willingness to learn and develop masonry techniques.
- 5) Masonry professionals, including Helper Masons, can advance in their careers by acquiring more skills and experience. They may become skilled masons, leading teams on projects, or even starting their own masonry businesses. Continuing education and certifications can also lead to higher-paying positions.
- 6) Safety training is incredibly important in the construction industry, especially for Helper Masons. Construction sites can be hazardous, and proper safety training helps prevent accidents, injuries, and fatalities. Helper Masons need to be aware of safety protocols, wear appropriate PPE, understand potential risks, and follow safety guidelines to ensure a safe work environment for themselves and others.
- 7) Masonry work is needed in a variety of structures, including:
 - Residential buildings (houses, apartments)
 - Commercial buildings (offices, stores)
 - Industrial facilities (factories, warehouses)
 - Educational institutions (schools, universities)
 - Healthcare facilities (hospitals, clinics)
 - Religious structures (churches, temples, mosques)
 - Public infrastructure (bridges, tunnels)
 - Landscaping and hardscaping elements (retaining walls, pathways)

Key Learning Outcomes

After the end of this module, participants will be able to:

1. Explain brief on metric system of measurement;
2. Explain briefly inch system of measurement;
3. Perform basic arithmetic calculations;
4. Know about basic geometrical shapes;
5. Calculate area, volume and perimeter of different shapes;

UNIT 2.1: Numeracy Skills

Unit Objectives

At the end of this unit, trainer will ensure that participant will be able to:

1. Perform basic mathematical calculation
2. Identify the different types of shapes
3. Calculate the perimeter of a square, rectangle, triangle and circle

Resources to be used

- **Theory**
 - **Training Kit** - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - Calculator, conversion charts, measurement tapes

Do

- Perform basic mathematical calculation
- Identify the different types of shapes
- Calculate the perimeter of a square, rectangle, triangle and circle

Notes for facilitation

- Use the Helper Mason PHB and refer unit 2.1 to explain Numeracy Skills for Helper Mason.
- Helper Masons often need to perform basic mathematical calculations as part of their work. These calculations can involve measuring distances, estimating quantities of materials needed, and determining dimensions for construction. Basic arithmetic skills, such as addition, subtraction, multiplication, and division, are essential for accurately completing tasks and ensuring that construction projects are executed correctly.
- In the construction industry, Helper Masons encounter various shapes when working with different building materials. They should be able to identify and differentiate shapes such as squares, rectangles, triangles, circles, and more. This skill helps them accurately position and arrange bricks, stones, and other construction elements according to the design specifications.

- Calculating the perimeter of different shapes is important for determining the lengths of sides and edges. Helper Masons might need to calculate perimeters to estimate the amount of material needed for constructing walls, pathways, or other structures. Here's how to calculate the perimeter for each shape:
 - Square: Perimeter = $4 \times \text{Side length}$
 - Rectangle: Perimeter = $2 \times (\text{Length} + \text{Width})$
 - Triangle: Perimeter = Sum of all three sides
 - Circle: Perimeter (also called circumference) = $2 \times \pi \times \text{Radius}$
- Having the ability to calculate perimeters accurately allows Helper Masons to plan effectively, order the right amount of materials, and ensure that the structures they're working on meet the intended dimensions.

Say

Let's engage in a quick and practical activity that focuses on enhancing Helper Masons' ability to identify and differentiate various shapes commonly encountered in the construction industry. This activity aims to provide a hands-on experience in recognizing shapes and their applications, which is essential for accurate positioning and arrangement of construction elements as per design specifications.

Activity: Identifying Construction Shapes

- **Purpose:** This activity aims to develop Helper Masons' ability to identify and differentiate various shapes encountered in construction work, facilitating precise positioning and arrangement of materials.
- **Resources Required:** Visual aids or images depicting different shapes (square, rectangle, triangle, circle, etc.), paper or cards with shape names, flip charts, markers.
- **Tentative Duration:** 30 Minutes
- **Procedure:**
 - **Introduction:** Begin by discussing the significance of recognizing different shapes in construction work and how it aids in accurate material placement.
 - **Shape Presentation:**
 - Present visual aids or images of common shapes: square, rectangle, triangle, circle, etc.
 - Explain the characteristics and attributes of each shape briefly.
 - **Shape Recognition Game:**

- Distribute paper or cards with shape names to participants.
- Display images of various construction elements (bricks, stones, tiles) with different shapes.
- Participants match the correct shape name to each displayed element.
- **Group Discussion:**
 - Engage participants in a discussion about the importance of recognizing these shapes in construction scenarios.
 - Participants share their observations about how this skill benefits accuracy.
- **Scenario-based Application:**
 - Describe construction scenarios where identifying specific shapes is crucial (e.g., arranging bricks in a decorative pattern).
 - Participants discuss and suggest appropriate strategies based on shape recognition.
- **Q & A Session:**
 - Allow participants to ask questions and seek clarifications about shape recognition.
- **Reflection and Conclusion:**
 - Engage participants in reflecting on the insights gained about shape identification's significance in construction work.
 - Summarize key takeaways, highlighting how this skill contributes to precise material arrangement.
- **Expected Outcome:** Through this activity, Helper Masons will develop a practical understanding of identifying and differentiating shapes relevant to construction work. They will recognize the value of this skill in accurately positioning and arranging construction elements according to design specifications.

UNIT 2.2: Systems of Measurement

Unit Objectives

At the end of this unit, trainer will ensure that participant will be able to:

1. List the different types of systems of measurement
2. Follow the conversion of measurements
3. Read a measuring tape in imperial system
4. Read a measuring tape in metric system

Resources to be used

- **Theory**
 - **Training Kit** - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - Calculator, conversion charts, measurement tapes

Do

- Explain the different types of systems of measurement
- Describe the conversion of measurements
- Explain the measuring tape in imperial system
- Explain the measuring tape in metric system

Notes for facilitation

- Use the Helper Mason PHB and refer unit 2.2 to explain Systems of Measurement.
- Different Types of Systems of Measurement: There are two main systems of measurement used globally: the Imperial system and the Metric system.
 - Imperial System: This system is commonly used in the United States and some other countries. It includes units like inches, feet, yards, and miles for length, and ounces, pounds, and tons for weight.
 - Metric System: The metric system is widely used worldwide and is based on powers of ten. It includes units like millimeters, centimeters, meters, and kilometers for length, and grams and kilograms for weight.
- Following the Conversion of Measurements: Helper Masons often encounter measurements in

both the Imperial and Metric systems. They need to be able to convert between these systems when necessary. Conversion involves understanding the relationships between different units within each system and performing the appropriate calculations.

- **Reading a Measuring Tape in Imperial System:** In the Imperial system, measuring tapes commonly have markings in inches and fractions of an inch. Helper Masons need to read these markings accurately to measure lengths. The tape typically has large numbered markings indicating whole inches, smaller lines indicating half-inch increments, and even smaller lines for quarter-inch and eighth-inch increments.
- **Reading a Measuring Tape in Metric System:** Measuring tapes in the Metric system are marked in centimeters and millimeters. The tape will have large numbers indicating centimeters and smaller lines or numbers indicating millimeters. Helper Masons need to read the tape carefully to determine the length accurately.
- **Measurement units relevant to a Mason**
 - **Length/Distance:**
 - Foot (ft): 1 ft = 12 inches
 - Inch (in): 1 inch = 2.54 centimeters (approx.)
 - Meter (m): 1 m = 3.28084 feet (approx.)
 - **Area:**
 - Square Foot (sq ft): 1 sq ft = 144 square inches
 - Square Meter (sq m): 1 sq m = 10.7639 square feet (approx.)
 - **Volume:**
 - Cubic Foot (cu ft): 1 cu ft = 7.48052 gallons (approx.)
 - Cubic Meter (cu m): 1 cu m = 35.3147 cubic feet (approx.)
 - **Weight/Mass:**
 - Pound (lb): 1 lb = 0.453592 kilograms (approx.)
 - Kilogram (kg): 1 kg = 2.20462 pounds (approx.)
 - **Brick and Block Size:**
 - Standard Brick: 7.625 inches (length) x 3.625 inches (width) x 2.25 inches (height)
 - Concrete Block (typically): 16 inches (length) x 8 inches (width) x 8 inches (height)
 - **Mortar Mixing Ratios (by volume):**
 - Common mortar mix: 1 part cement : 3 parts sand
 - High-strength mortar mix: 1 part cement : 2 parts sand

- **Note:** Water is added to achieve the desired consistency.
- **Tile Size:**
 - Tile size can vary significantly, but common dimensions include 12 inches x 12 inches, 18 inches x 18 inches, etc.

Activity -1

Mathematical skills - Practice

Conduct a group activity.

- Ask the participants to assemble at a designated place.
- Distribute the 'Practical Activity Format' which includes task, duration allowed, specific instructions, method statements, etc.
- Explain the purpose and duration of the activity.
- Set guidelines pertaining to discipline and expected tasks.
- Maximum duration mentioned in the below table is for extensive practice and corresponding guidance until the skill is acquired by the participants.
- Explain the roles to each of them.
- Rotate the roles after completing one cycle.

Sub activity	Skill Practice	Time	Resources
1	Measure the size of the classroom in metric system by using a tape measure	2 Hours	Tape measure, stationary items (pen, marker, scale and notebook)
2	Measure the size of the classroom in imperial system by using a tape measure	2 Hours	
3	Convert the following: <ul style="list-style-type: none"> • 100000 mm into mts, and • 1000mts into mm. • 100 inches into ft. • 10000 sft into m² • 1m³ into mm³ 	1 Hour	
4	<ul style="list-style-type: none"> • Solve the below: • $300-200+100 \times 50-30/5 = \dots\dots\dots$ • $100-20/3+15-150 = \dots\dots\dots$ • $1.5-0.2/4+2.8-1500+15000 = \dots\dots\dots$ 	1 Hour	

5	<ul style="list-style-type: none"> Calculate, how many 600x600 mm tile units are needed to install flooring for an area of 20 sft? 	2 Hours	
6	<ul style="list-style-type: none"> Demonstrate and practice 3-4-5 method for squaring of corners of the classroom 	2 Hours	

Table 2.2.1 - Mathematical skills

Specific Instructions:

- Make sure all the participants are wearing proper PPEs.
- Explain the overall procedure and key points of measuring the classroom with a tape measure before commencing the exercise.
- Use the unit conversion table for the activity.
- Give hints on the method of converting the units easily.
- Assist them wherever, it is necessary during the activity.
- At end of the process ask each one of them to mention the experience they had in activity.
- Clarify doubts, if any.
- Check and observe that all the steps followed by the participants.
- Complete the activity in scheduled time, at the end of activity, to assess the skill and knowledge acquired, call a person randomly from the group and ask him to explain the steps involved for mathematical conversion of units, calculation of area/volume and squaring of corners.

Exercise

Key Solutions to PHB Exercise

- 1) For a Helper Mason, understanding volume calculations is essential when working with concrete. They might assist in preparing concrete mixes by measuring the volume of various components like cement, sand, aggregate, and water. Proper volume calculations ensure that the right proportions of materials are used, resulting in a consistent and durable concrete mixture. This knowledge helps Helper Masons ensure the quality of concrete and contribute to the successful execution of construction projects.
- 2) The radius is the distance from the center of a circle or sphere to its outer edge. For a Helper Mason, understanding the concept of radius is important when working with curved elements in construction. They might encounter structures like arches or curved walls where radius measurements are used to create accurate and aesthetically pleasing designs.
- 3) Area is the measure of the space enclosed by a two-dimensional shape or surface. Helper Masons may encounter the concept of area when working with tiles, floor plans, or paving. Understanding area helps them calculate the amount of materials needed, like tiles or paving stones, to cover a specific surface area accurately.
- 4) Volume refers to the amount of three-dimensional space occupied by an object or substance. Helper Masons can apply the concept of volume when dealing with concrete pours, such as in foundations, slabs, or columns. They might assist in calculating the volume of concrete needed for a particular structure, ensuring that the correct amount of concrete is mixed and poured to achieve the desired strength and stability.



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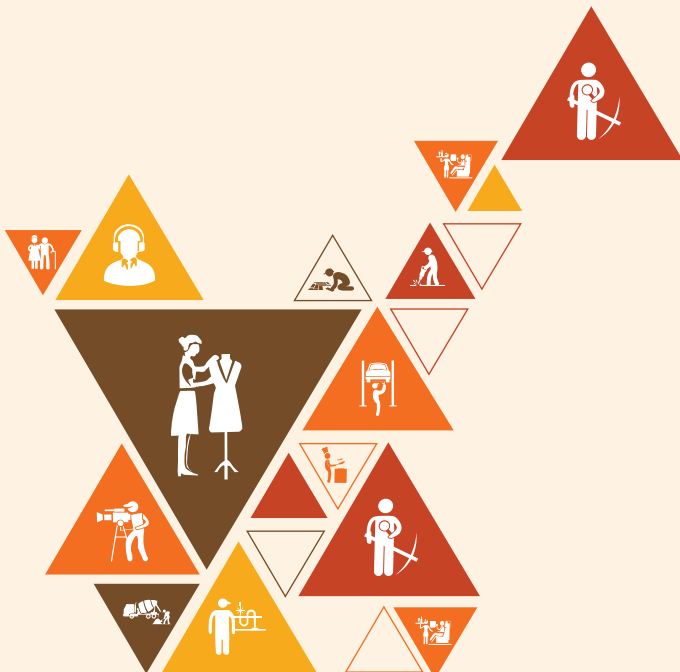


3. Tools, Materials and Consumables

Unit 3.1 - Masonry Hand Tools and Equipment

Unit 3.2 - Construction Materials

Unit 3.3 - Handling and Storage of Material



CON/N0102

Key Learning Outcomes

After the end of this module, participants will be able to:

1. Identify different basic masonry tools and equipment
2. Use basic masonry tools and equipment
3. Maintain and handle tools and equipment in correct and safe way
4. Distinguish between materials used in masonry work at site such as bricks, blocks, stones, cement, mortar, concrete, tile, marble, granite, glass, admixtures and chemicals, etc.
5. Store masonry tools, equipment and materials like sand, cement, bricks, tiles, aggregates, admixtures etc. in correct way
6. Identify and distinguish other common construction materials like reinforcement bars, plywood, timber, paint etc.
7. Stack the materials as per the nature, size and shape of material and the space available
8. Arrange and shift construction material on the construction site safely and effectively
9. Lift and shift materials using right techniques
10. Use conveyance equipment for movement of materials for shifting

UNIT 3.1: Masonry Hand Tools and Equipment

Unit Objectives

After the end of this unit, participants will be able to:

1. Identify basic masonry hand tools and equipment
2. Use basic hand tools and equipment
3. Maintain and protect tools and equipment

Resources to be used

- **Theory**
 - **Training Kit** - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - **Hand tools** – Trowel, Chisel, Float, Hammer, Groover, Jointer, etc.
 - **Power tools** – Vibrator, Plate compactor, Rammer, Concrete mixer, etc.

Do

- Explain basic masonry hand tools and equipment
- Describe basic hand tools and equipment
- Reiterate how to maintain and protect tools and equipment

Notes for facilitation

- Use the Helper Mason PHB and refer unit 3.1 to explain Masonry Hand Tools and Equipment.
- Helper Masons need to be familiar with a variety of basic masonry hand tools and equipment used in their work. These include tools such as trowels, hammers, chisels, levels, measuring tapes, mason's lines, plumb bobs, and jointers. They also use equipment like wheelbarrows, buckets, mixing trays, and mortar boards to transport and prepare materials.
- Helper Masons use these tools and equipment to perform various tasks on the construction site. They use trowels to spread mortar, hammers and chisels to shape and cut materials, levels to ensure even surfaces, and measuring tapes to take accurate measurements. Wheelbarrows and buckets are used to transport materials, while mixing trays and mortar boards are used to prepare mortar.
- Proper maintenance and protection of tools and equipment are crucial for their longevity and

effectiveness. Helper Masons should:

- Clean tools after use to prevent build-up of mortar and debris.
- Store tools in a dry and safe location to prevent rust and damage.
- Lubricate moving parts of tools to keep them functioning smoothly.
- Inspect tools regularly for signs of wear or damage and replace or repair as needed.
- Use tool covers or cases to protect tools from harsh weather conditions.
- A Helper Mason relies on these tools to carry out various tasks efficiently and accurately in the construction and masonry industry.
 - **Tools for Masonry (for Helper Mason):** Helper Masons use a range of tools for masonry work, including:
 - **Trowels:** Used for spreading and shaping mortar.
 - **Brick Hammers:** For cutting and shaping bricks or stones.
 - **Jointers:** Used to finish and shape mortar joints.
 - **Chisels:** For precise cutting and shaping of materials.
 - **Mason's Square:** Ensures proper angles and alignments.
 - **Mason's Line and Line Blocks:** Used for straight and level bricklaying.
 - **Margin Trowel:** Smaller trowel for detailed work.
 - **Mason's Hammer:** For breaking bricks and stones.
 - **Levelling Tools (for Helper Mason):** Levelling tools are essential for ensuring that surfaces are even and straight. Helper Masons use:
 - **Spirit Levels:** Measures horizontal and vertical levels.
 - **Line Levels:** Ensures that mason's lines are straight and level.
 - **Plumb Bobs:** Used for vertical alignments.
 - **Measuring and Marking Tools (for Helper Mason):** Precise measurements and markings are crucial in masonry. Helper Masons use tools like:
 - **Measuring Tapes:** For length and distance measurements.
 - **Mason's Rule:** A specialized ruler for brick courses.
 - **Chalk Lines:** Creates straight lines for layout and levelling.
 - **Cutting Tools (for Helper Mason):** Cutting tools are essential for shaping and resizing materials. Helper Masons use:
 - **Bolster Chisels:** For cutting bricks and stones.
 - **Brick Sets:** Creates clean breaks in bricks.
 - **Masonry Saws:** Used for more intricate and accurate cuts.
 - **Earthwork Tools (for Helper Mason):** Earthwork tools are used for excavation and preparation of surfaces. Helper Masons might use:
 - **Shovels:** For digging and moving materials.

- **Picks:** For breaking up hard ground.
- **Rakes:** Used for levelling and smoothing surfaces.
- Other Helping Tools (for Helper Mason): Other tools that aid in masonry work include:
 - **Wheelbarrows:** Transporting materials around the site.
 - **Buckets:** Holding and transporting smaller quantities of materials.
 - **Mixing Trays and Boards:** Preparing mortar mixes.
 - **Mason's Bags:** Carrying tools and smaller materials.

Say



Let's engage in a quick and practical activity that focuses on familiarizing Helper Masons with the various tools commonly used in masonry work. This activity aims to provide a hands-on experience in recognizing and understanding the functions of essential masonry tools, which are crucial for effective and precise construction tasks.

Activity: Exploring Masonry Tools

- **Purpose:** This activity aims to introduce Helper Masons to the tools commonly used in masonry work, enhancing their knowledge of tool functions and applications.
- **Resources Required:** Visual aids or images depicting masonry tools, flip charts, markers.
- **Tentative Duration:** 30 Minutes
- **Procedure:**
 - **Introduction:** Begin by discussing the significance of being familiar with masonry tools and their roles in construction tasks.
 - **Tool Presentation:**
 - Present visual aids or images of essential masonry tools: Trowels, Brick Hammers, Jointers, Chisels, Mason's Square, Mason's Line, Line Blocks, Margin Trowel, and Mason's Hammer.
 - Briefly describe the purpose and function of each tool.
 - **Tool Recognition and Function:**
 - Display images of specific masonry tools.
 - Participants identify the tool and discuss its primary function.
 - **Group Discussion:**
 - Engage participants in discussing scenarios where each tool would be used.

- Participants share insights about how these tools contribute to efficient masonry work.
- **Application Scenarios:**
 - Describe scenarios where Helper Masons need to use specific tools (e.g., leveling with a Mason's Square, shaping with a Chisel).
 - Participants brainstorm how they would apply the tool effectively in each scenario.
- **Q & A Session:**
 - Allow participants to ask questions and seek clarifications about masonry tools.
- **Reflection and Conclusion:**
 - Engage participants in reflecting on the insights gained about essential masonry tools.
 - Summarize key takeaways, highlighting the importance of tool familiarity in quality construction work.
- **Expected Outcome:** Through this activity, Helper Masons will gain practical knowledge about essential masonry tools and their functions. They will understand the roles these tools play in various construction scenarios, contributing to their ability to carry out precise and effective masonry tasks.

UNIT 3.2: Construction Materials

Unit Objectives

After the end of this unit, participants will be able to:

1. Identify different types of construction materials

Resources to be used

- **Theory**
 - Training Kit - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - **Natural materials** – They are naturally occurring substances, such as mud or clay, stone, gravel, rocks, sand, wood, etc.
 - **Artificial materials** – They are man-made products, such as cement, bricks, blocks, tiles, etc.

Do

- Explain the different types of construction materials.

Notes for facilitation

- Use the Helper Mason PHB and refer unit 3.2 to Construction Materials.
- A Helper Mason should be familiar with these different construction materials to effectively assist in various masonry and construction tasks.
 - **Bricks:** Solid units made from clay, concrete, or other materials, used for building walls, facades, and other structures.
 - **Concrete Blocks:** Hollow or solid blocks made from concrete, used in walls and other load-bearing applications.
 - **Stones:** Natural or manufactured stones used for decorative and structural purposes in walls, facades, and landscaping.
 - **Mortar:** A mixture of cement, sand, and water used to bond bricks, stones, and blocks together.

- **Cement:** A binding material used to make concrete and mortar.
- **Aggregates:** Crushed stone, gravel, sand, or other materials used as filler in concrete and mortar mixes.
- **Steel Reinforcement:** Steel bars or mesh used to reinforce concrete structures, such as columns and beams.
- **Wood:** Used for formwork, scaffolding, and in some construction applications like framing and finishes.
- **Plaster:** A mixture of cement, sand, and water used for finishing interior and exterior walls.
- **Tiles:** Ceramic, porcelain, or natural stone tiles used for flooring, walls, and decorative purposes.
- **Roofing Materials:** Shingles, tiles, metal sheets, or other materials used to create roofs.
- **Insulation Materials:** Materials like foam, fiberglass, or mineral wool used to insulate buildings.
- **Waterproofing Materials:** Membranes, coatings, and sealants used to prevent water penetration.
- **Adhesives and Sealants:** Used for bonding materials together and sealing joints.
- **Paints and Finishes:** Coatings used for protecting and decorating surfaces.
- **Glass:** Used for windows, doors, and decorative elements.
- **Metal:** Used for structural elements, frames, and various architectural details.
- **Plastics:** Used for pipes, insulation, and some structural components.
- **Asphalt:** Used for road paving and roofing materials.
- **Concrete Additives:** Chemicals added to concrete to modify its properties, such as strength and durability.

Activity -1



Identification of Masonry Tools, Materials and Equipment

Conduct a skill practice activity.

- Ask the participants to assemble at a designated place.
- Distribute the 'Practical Activity Format' which includes task, duration allowed, specific instructions, method statements, etc.
- Explain the purpose and duration of the activity.
- Set guidelines pertaining to discipline and expected tasks.
- Maximum duration mentioned in the below table is for extensive practice and corresponding

guidance until the skill is acquired by the participants.

- Explain the roles to each of them.
- Rotate the roles after completing one cycle.

Sub activity	Skill Practice	Time	Resources
1	Identify and use construction material	8 hours	Tool Box With Lock And Key, Measuring Tape/Rule, Scale, Steel Square, Trowel, Water Level, Spirit Level, Plumb Bob, Straight Edge, Mason’s Hammer, String Line, Jointers, Mallets, Wedges, Screeds, Floats, Bolster Chisel, Rubber/ Wooden Hammers, Spade, Sponge, Volume Box, Weighing Balance, Tile Scribes Or Hand Held Tile Cutters, Screeds, Floats , Power Wet Saws , Electric Drills, Grinders , Vibrators , Hand Operated Concrete Mixer, Mortar Mixing Board/Mortar Pan, Safety Helmets, Hand Gloves, Safety Shoes, Safety Harness, Nose Mask
2	Identify measuring equipment	4 hours	
3	Check various trowels and utilize them	2 hours	
4	Identify and use power tools for masonry	4 hours	
5	Identify and operate hand, power tools	8 hours	
6	Identify and operate equipment with PPEs		

Table 3.2.1 – Identification of tools & equipment

Specific Instructions

- Demonstrate and show the use of each tool, device and equipment.
- Ask the participant to practice the same.
- Check whether the participants are following the standard and safe procedure of usage of tools and equipment.
- Intervene wherever needed and correct the mistakes done by participants.
- Ensure that each of the participants are well versed in identifying and using the masonry tools and equipment.
- Make sure that the participants are well versed in checking the condition and run any immediate maintenance of masonry tools and equipment.
- Ensure that the participants are well versed in requesting and returning the new material and unused material respectively to the store.
- Complete the activity in scheduled time, at the end of activity to assess the skill acquired, call a person randomly from the group and ask him to demonstrate any tool.

UNIT 3.3: Handling and Storage of Construction Materials

Unit Objectives

After the end of this unit, participants will be able to:

1. Handle different materials at construction site
2. Store different materials at construction site
3. Take safety precautions while handling and storing the construction materials

Topic Introduction

1. Give the participants a brief overview of this unit
2. Applications in various job environment

Resources to be used

- Theory
 - **Training Kit** - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- Practical
 - **Natural materials** - They are naturally occurring substances, such as mud or clay, stone, gravel, rocks, sand, wood, etc.
 - **Artificial materials** - They are man-made products, such as cement, bricks, blocks, tiles, etc.

Do

- Explain handling different materials at construction site
- Describe storing different materials at construction site
- Reiterate safety precautions while handling and storing the construction materials

Notes for facilitation

- Use the Helper Mason PHB and refer unit 3.3 to Handling and Storage of Construction Materials.
- Helper Masons handle various construction materials as part of their work. When handling materials:
 - Lift objects using proper lifting techniques to prevent strain.
 - Wear appropriate personal protective equipment (PPE) such as gloves and safety shoes.

- Avoid dragging materials on rough surfaces to prevent damage.
- Use tools like wheelbarrows, buckets, and trolleys to transport heavy or bulky materials.
- Proper storage of materials is crucial to maintain their quality and safety. When storing materials:
 - Keep materials on elevated surfaces or pallets to prevent contact with water or soil.
 - Store materials in designated areas to prevent obstruction and ensure easy access.
 - Use covers or tarps to protect materials from weather conditions.
 - Keep hazardous materials stored separately and clearly labelled.
- Safety is a top priority on a construction site. To ensure the well-being of all workers:
 - Follow safety guidelines and protocols provided by supervisors and site management.
 - Wear appropriate PPE, such as hard hats, gloves, safety glasses, and respiratory protection if needed.
 - Use caution signs or barriers to mark hazardous areas or stored materials.
 - Know the proper procedures for handling hazardous or flammable materials.
 - Use mechanical aids like cranes or forklifts for heavy or awkward materials.
 - Use mechanical aids like cranes or forklifts for heavy or awkward materials.
 - Keep walkways and work areas clear to prevent tripping hazards.

Say

Let's engage in a quick and practical activity that focuses on understanding the importance of proper storage practices for construction materials. This activity aims to provide Helper Masons with hands-on experience in recognizing and implementing essential storage measures to maintain material quality and safety on construction sites.

Activity

- **Purpose:** This activity aims to sensitize Helper Masons to the significance of correct storage practices for construction materials, emphasizing their role in preserving material quality and safety.
- **Resources Required:** Visual aids or images depicting proper storage practices, flip charts, markers.
- **Tentative Duration:** 30 Minutes
- **Procedure:**
 - **Introduction:** Begin by discussing the critical nature of proper material storage in construction work for maintaining quality and safety.
 - **Storage Practice Presentation:**
 - Present visual aids or images illustrating proper storage practices: Elevated Surfaces,

- Designated Areas, Covers or Tarps, Separate Storage for Hazardous Materials.
- Explain the rationale and implications of each practice.
- **Storage Method Discussion:**
 - Engage participants in a discussion about their observations of material storage practices on construction sites.
 - Participants share insights about the benefits of adhering to these practices.
- **Group Scenario Analysis:**
 - Present scenarios (e.g., storing bricks, sand, hazardous chemicals) and discuss how each storage practice would apply.
 - Participants analyze the appropriateness of each practice for the given scenario.
- **Q & A Session:**
 - Allow participants to ask questions and seek clarifications about proper material storage.
- **Reflection and Conclusion:**
 - Engage participants in reflecting on the insights gained about proper material storage practices.
 - Summarize key takeaways, emphasizing the role of correct storage in maintaining material quality and safety.
- **Expected Outcome:** Through this activity, Helper Masons will gain practical understanding of proper storage practices for construction materials. They will recognize the importance of implementing these measures to safeguard material quality and ensure a safe and organized construction environment.

Exercise

Key Solutions to PHB Exercise

- 1) The primary purpose of a brick trowel in masonry work is to spread and apply mortar to bricks, blocks, or stones during construction. It has a flat, pointed blade that allows the Helper Mason to scoop up mortar and then spread and apply it evenly onto the surfaces of the masonry units.
- 2) A mason's level is used to ensure accurate vertical alignment in construction. By placing the level against a surface, Helper Masons can determine whether the surface is perfectly plumb (vertical) or if adjustments are needed. This helps maintain the straightness and verticality of walls, columns, and other vertical elements.
- 3) A hand tool used to create bevelled edges on bricks or blocks is a chisel. By skilfully chiselling the edges of bricks or blocks, Helper Masons can create chamfered or bevelled profiles, adding visual interest to the finished masonry work.
- 4) A jointer is used in masonry to create grooves or impressions in mortar joints between bricks or blocks. This serves both functional and aesthetic purposes. The jointer can create various types of joints, including concave, V-shaped, or flush joints. It improves the strength and weather resistance of the mortar joints while enhancing the appearance of the masonry.
- 5) A masonry brush is used to achieve a clean and polished finish on masonry surfaces. Helper Masons use it to remove excess mortar, dust, and debris from newly laid bricks or blocks. It's also employed for brushing on special coatings, sealants, or washes to enhance the appearance and durability of the masonry.
- 6) Cement is a binding material, whereas concrete is a mixture of cement, aggregates (such as sand and gravel), and water. Cement is used as a component in making concrete, which is a versatile construction material used for various applications, including foundations, slabs, and structural elements.
- 7) Mortar mix is a mixture of cement, sand, and water used for bonding masonry units like bricks or stones. It has a higher proportion of sand compared to concrete, making it more workable and adhesive. Unlike concrete, which has aggregates for strength, mortar provides a cohesive bond between masonry units.
- 8) Rebar is commonly used to reinforce concrete structures, such as foundations, columns, and beams. In these applications, rebar adds tensile strength to the concrete, enhancing its load-bearing capacity and overall structural integrity.
- 9) Natural stones are extracted from quarries and retain their inherent characteristics, colors, and textures. Manufactured stones are artificial materials made to resemble natural stones. In masonry applications, natural stones provide unique aesthetics, while manufactured stones offer more uniformity and ease of installation.
- 10) One example is using recycled concrete aggregate (RCA) as a sustainable choice. RCA involves reusing crushed concrete from demolished structures as an aggregate in new concrete, reducing

the need for virgin aggregates and minimizing waste.

- 11) Glass panels are fragile and can easily break if mishandled during transport. Proper handling prevents breakage, ensuring the safety of workers and minimizing material waste.
- 12) Bags of cement should be stored in a dry, well-ventilated area off the ground to prevent moisture from entering the bags. This prevents the cement from hardening prematurely and losing its effectiveness.
- 13) Lumber and plywood should be stored in a flat, dry area with sufficient spacing between stacks. Using stickers (small wooden blocks) between boards allows air circulation, reducing the risk of warping and fungal growth.
- 14) When handling heavy steel beams, Helper Masons should use appropriate lifting equipment like cranes or forklifts. They should follow proper lifting techniques, wear appropriate PPE, and work with a team to ensure safe manoeuvring.
- 15) Proper segregation prevents hazardous materials from interacting with incompatible substances, reducing the risk of chemical reactions, leaks, or releases. It also ensures that emergency response procedures are effective and protects workers and the environment from potential harm.



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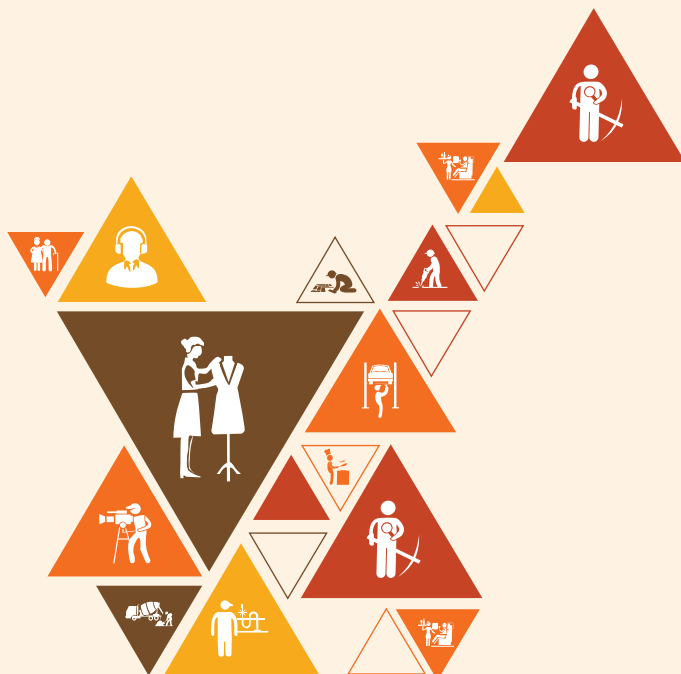
Transforming the skill landscape



4. Carrying Out Earthwork Manually

Unit 4.1 - Preparatory Work and Soil Cutting

Unit 4.2 - Backfilling and Compaction Manually



CON/N0104

Key Learning Outcomes

After the end of this module, participants will be able to:

1. Describe the work to be done during earthwork
2. Select and use tools required for cutting earth and cleaning excavated pit
3. Describe the function of different tools used for manual excavation
4. Perform cleaning and preparatory works to be carried out prior to excavation work
5. Excavate the earth maintaining required slope, length, width and depth
6. Perform backfilling and compaction of earth using hand operated compactors
7. Follow appropriate safety measures while working in confined space
8. Illustrate the precautions to avoid the collapse of trenches or pit

UNIT 4.1: Preparatory Work and Soil Cutting

Unit Objectives

After the end of this unit, participants will be able to:

1. Discuss the operations done in earthwork
2. Carry out preparatory work prior to earthwork
3. Excavate the earth manually like digging, trenching
4. Carry out the dressing work after excavation job
5. Identify the Do's and Don'ts in excavation

Topic Introduction

1. Give the participants a brief overview of this unit
2. Applications in various job environment

Resources to be used

- **Theory**
 - **Training Kit** - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - Trowel, Pointing Trowel, Shovel, Mortar Pan, Spade, Pick Axe, GI Bucket 5L Capacity, Wheel Barrow, Lime Powder, Wooden Pegs, Hammer, Hard Broom, Source of Water, Ladder, Measuring Tape, Mason's Line, Hand Roller, Plate Vibrator, Power Source, Helmet, Safety Shoes, Cotton Hand Gloves, Goggles, Reflective Jackets, Safety Message Boards

Do

- Explain the operations done in earthwork
- Describe preparatory work prior to earthwork
- Explain the process of Excavating the earth manually like digging, trenching
- Carrying out the dressing work after excavation job
- Identifying the Do's and Don'ts in excavation

Notes for facilitation

- Use the Helper Mason PHB and refer unit 4.1 of Preparatory Work and Soil Cutting.
- Earthwork involves various tasks related to the excavation and movement of soil, rock, and other materials on a construction site. These operations are crucial for creating foundations, trenches,

and other groundwork. Helper Masons might be involved in tasks such as excavating, backfilling, grading, and levelling to prepare the site for construction.

- Before starting earthwork, Helper Masons engage in preparatory tasks like surveying the site, marking the boundaries, and setting up reference points. They might remove vegetation, debris, and obstacles from the area and ensure proper access for heavy equipment.
- Helper Masons may manually excavate the earth by digging, trenching, or using hand tools like shovels and picks. They carefully remove soil to the required depth while maintaining the correct angles and dimensions specified by engineers or supervisors. Safety is paramount during excavation to prevent cave-ins and accidents.
- After excavating, dressing work involves shaping the excavated area to the desired profile. This might include levelling the bottom of a foundation trench, creating slopes, and ensuring proper compaction of the soil. Helper Masons play a role in ensuring that the excavated area is prepared according to the project specifications.
- **Do's and Don'ts in Excavation (for Helper Mason):**
 - **Do's:**
 - Wear proper personal protective equipment (PPE), including helmets, gloves, and sturdy footwear.
 - Follow safety protocols and guidelines provided by supervisors.
 - Ensure that the excavation area is adequately supported to prevent cave-ins.
 - Test for hazardous gases if needed before entering confined spaces.
 - Work with caution near utilities to avoid damaging underground services.
 - **Don'ts:**
 - Don't work in an unsupported or unstable excavation.
 - Don't enter a trench or excavation without proper training and safety measures.
 - Don't remove soil too quickly, as it can destabilize the trench walls.
 - Don't work near overhead power lines without appropriate precautions.
 - Don't ignore warning signs or barriers placed around excavation areas.

Say

Let's participate in a practical activity that sheds light on the preparatory tasks and activities that Helper Masons engage in before commencing earthwork. This activity aims to provide participants with hands-on experience in understanding the essential steps taken by Helper Masons to ensure safe and accurate excavation and site preparation.

Activity

- **Purpose:** This activity aims to familiarize participants with the preparatory tasks and earthwork processes carried out by Helper Masons before construction begins.
- **Resources Required:** Visual aids or images depicting surveying, excavation, and dressing work, flip charts, markers.
- **Tentative Duration:** 45 Minutes
- **Procedure:**
 - **Introduction:** Begin by discussing the importance of preparatory tasks and earthwork in construction projects and their impact on the overall project.
 - Task Presentation:
 - Present visual aids or images illustrating preparatory tasks (surveying, marking boundaries, removing obstacles), excavation using hand tools, and dressing work.
 - Describe each task briefly, emphasizing its purpose and significance.
 - Group Discussion - Earthwork Process:
 - Divide participants into groups.
 - Assign each group a specific task (e.g., excavation using hand tools, marking boundaries).
 - Participants discuss and brainstorm the steps involved in their assigned task.
 - **Scenario Discussion:**
 - Describe a construction site scenario that involves preparatory tasks and earthwork.
 - Groups present how their assigned tasks would be executed in the given scenario.
 - **Safety Emphasis:**
 - Highlight safety precautions during excavation to prevent accidents and cave-ins.
 - Discuss the importance of proper angles and dimensions in excavation work.
 - **Q & A Session:**
 - Allow participants to ask questions and seek clarifications about preparatory tasks and earthwork.
 - **Reflection and Conclusion:**
 - Engage participants in reflecting on the insights gained about preparatory tasks and earthwork.
 - Summarize key takeaways, underscoring the role of Helper Masons in ensuring safe and accurate site preparation.
- **Expected Outcome:** Through this activity, participants will develop practical knowledge about the preparatory tasks and earthwork processes carried out by Helper Masons. They will appreciate the significance of adhering to proper angles, dimensions, and safety measures during excavation, contributing to safe and effective construction practices.

UNIT 4.2: Backfilling and Manual Compaction

Unit Objectives

After the end of this unit, participants will be able to:

- Understand the importance of backfilling
- Carry out backfilling work effectively
- Understand the importance of compaction
- Carry out compacting work effectively
- Understand the Do's and Don'ts in backfilling and compaction

Resources to be used

- Theory
 - o Training Kit - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- Practical
 - o Trowel, Pointing Trowel, Shovel, Mortar Pan, Spade, Pick Axe, GI Bucket 5L Capacity, Wheel Barrow, Lime Powder, Wooden Pegs, Hammer, Hard Broom, Source of Water, Ladder, Measuring Tape, Mason's Line, Hand Roller, Plate Vibrator, Power Source, Helmet, Safety Shoes, Cotton Hand Gloves, Goggles, Reflective Jackets, Safety Message Boards

Do

- Explain the importance of backfilling
- Describe backfilling work effectively
- Explain the importance of compaction
- Explain the compacting work effectively
- Explain the Do's and Don'ts in backfilling and compaction

Notes for facilitation

- Use the Helper Mason PHB and refer unit 4.2 of Backfilling and Manual Compaction.
- Backfilling is the process of refilling an excavated area with soil or other materials after completing construction or utility installation. Proper backfilling is important to restore stability to the site, prevent settling, and avoid voids that could lead to future problems like sinkholes or structural

instability.

- Backfilling work involves carefully placing and compacting soil or other materials into an excavated area. Helper Masons may use hand tools, machinery, or a combination of both to ensure even distribution of backfill material. This helps restore the original ground level and ensures proper support for structures and utilities.
- Compaction is the process of compressing soil or other materials to reduce air voids and increase its density. Compacted soil provides better load-bearing capacity, reduces settling, and enhances stability. Proper compaction is crucial to ensure that the backfilled area supports the intended load and maintains its structural integrity over time.
- Compacting work involves using mechanical equipment, such as compactors or rollers, to compress the backfill material. Helper Masons assist in operating the equipment, ensuring that the soil is evenly compacted layer by layer. Compaction improves the density of the soil, minimizes settling, and provides a solid foundation for construction.
- Do's and Don'ts in Backfilling and Compaction (for Helper Mason):
 - **Do's:**
 - Do use appropriate backfill material, such as granular soils, to ensure proper drainage and stability.
 - Do compact the backfill material in thin layers using suitable compaction equipment.
 - Do follow compaction specifications provided by engineers or supervisors.
 - Do avoid over compaction, which can lead to excessive settlement.
 - Do ensure proper compaction around utility trenches and foundations.
 - **Don'ts:**
 - Don't use unsuitable materials like organic or clay soils for backfilling.
 - Don't skip the compaction process, as it can result in uneven settling.
 - Don't backfill too quickly without proper compaction, risking future settlement.
 - Don't neglect to test the compacted soil's density if required by the project specifications.
 - Don't backfill too close to structures without proper consideration for load distribution.

Say

Let's engage in a practical activity that delves into the concept of backfilling and the importance of proper compaction in construction. This activity aims to provide participants with hands-on experience in understanding the significance of backfilling and compaction processes carried out by Helper Masons to ensure stability and structural integrity in construction sites.

Activity

- **Purpose:** This activity aims to familiarize participants with the concept of backfilling, the importance of proper compaction, and the role of Helper Masons in ensuring stable and durable construction sites.
- **Resources Required:** Visual aids or images depicting backfilling, compaction equipment, flip charts, markers.
- **Tentative Duration:** 45 Minutes
- **Procedure:**
 - **Introduction:** Begin by discussing the significance of backfilling and proper compaction in construction, highlighting their role in maintaining stability and structural integrity.
 - **Concept Presentation:**
 - Present visual aids or images illustrating backfilling, compaction equipment, and the benefits of proper compaction.
 - Describe each concept briefly, emphasizing its impact on construction sites.
 - **Group Discussion - Backfilling Process:**
 - Divide participants into groups.
 - Assign each group a specific task related to backfilling (e.g., even distribution, compaction).
 - Participants discuss and brainstorm the steps involved in their assigned task.
 - **Scenario Discussion:**
 - Describe a construction site scenario that involves backfilling and compaction.
 - Groups present how their assigned tasks contribute to the scenario.
 - **Compaction Significance:**
 - Highlight the importance of proper compaction in enhancing load-bearing capacity and minimizing settling.
 - Discuss how compacted soil provides a stable foundation for structures.
 - **Q & A Session:**
 - Allow participants to ask questions and seek clarifications about backfilling and compaction.
 - **Reflection and Conclusion:**
 - Engage participants in reflecting on the insights gained about backfilling and compaction processes.
 - Summarize key takeaways, underscoring the role of Helper Masons in ensuring stable and durable construction sites.
- **Expected Outcome:** Through this activity, participants will develop a practical understanding of backfilling and compaction processes in construction. They will appreciate the importance of proper compaction in maintaining soil density, load-bearing capacity, and structural integrity, contributing to successful and stable construction projects.

Exercise

Key Solutions to PHB Exercise

1. **Compacting the earth involves reducing air voids within the soil to increase its density and load-bearing capacity. Two common methods of compacting earth are:**
 - **Mechanical Compaction:** Using heavy machinery like compactors or rollers to apply pressure and vibration, achieving denser soil.
 - **Manual Compaction:** Using hand tools like rammers to manually tamp and compact smaller areas of soil.
2. **Power tools used for compaction include:**
 - **Plate Compactors:** Vibrating plates that compact soil and asphalt.
 - **Jumping Jack Compactors:** Vertical compaction tools with a footplate for confined spaces.
 - **Tamping Rammers:** Handheld tools for compacting soil or gravel in narrow spaces.
3. **Backfilling is required for ground work of a building to:**
 - Restore the excavated area to its original level after construction.
 - Provide support and stability to the foundation, preventing settling or structural issues.
 - Minimize the risk of voids, erosion, and water accumulation around the foundation.
4. **Before digging the earth, several important jobs need to be done, including:**
 - **Site Surveying:** Determining accurate property boundaries and reference points.
 - **Clearing and Grubbing:** Removing vegetation, debris, and obstacles from the area.
 - **Utility Location:** Identifying and marking underground utilities to prevent damage.
5. **Layout marking involves transferring the dimensions and outlines of structures from construction plans to the actual ground. This can be done using:**
 - Chalk lines or marking paint for indicating lines and areas.
 - Wooden stakes or metal pins for marking reference points and corners.
6. **Earthwork involves two main operations:**
 - **Excavation:** Digging, trenching, or removing earth to create space for foundations, utilities, and other structures.
 - **Backfilling and Compaction:** Refilling and compacting excavated areas to restore stability and ensure proper support for structures.



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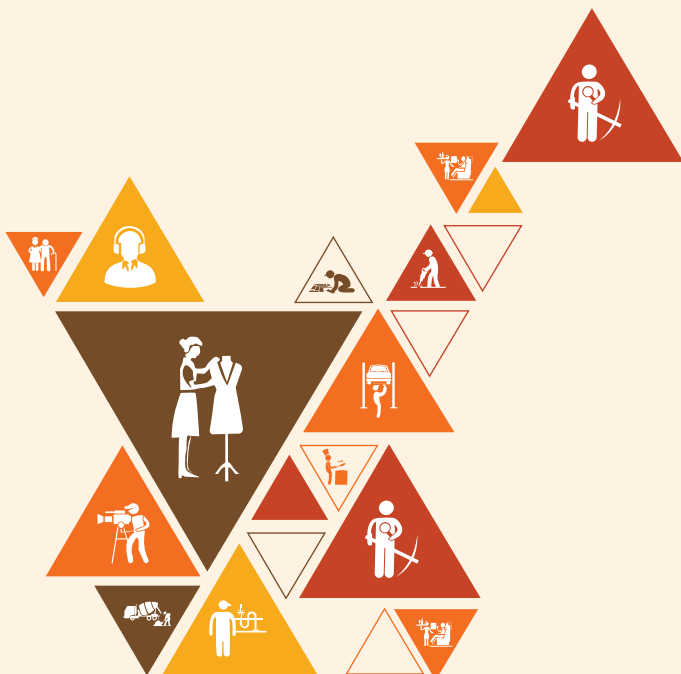
5. Erect and Dismantle Temporary Scaffolding

Unit 5.1 - Basics of Scaffolding

Unit 5.2 - Concept of Conventional Scaffolding

Unit 5.3 - Concept of Modular Scaffolding System

Unit 5.4 - Erecting and Dismantling of Temporary Scaffolding



CON/N0101

Key Learning Outcomes

After the end of this module, participants will be able to:

1. Discuss about scaffolding and the purpose of its erection
2. Describe the types of scaffolding
3. Define the different systems of scaffolding
4. Understand about the components of modular scaffolding system
5. Select and use the right tools for erection of a scaffolding
6. Erect the temporary scaffolding in level and plumb
7. Dismantle the temporary scaffolding
8. Follow safety measures to be followed while erecting and dismantling a scaffolding

UNIT 5.1: Basics of Scaffolding

Unit Objectives

After the end of this unit, participants will be able to:

- Describe about the basic concept of a temporary scaffolding
- Understand the benefits of a scaffolding
- Discuss the types of temporary scaffolding

Resources to be used

- **Theory**
 - **Training Kit** - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - Hammer, Spanner (set), Wrench, Pulley, Rope, Nuts and bolts, Measuring tape, Spirit level, Plumb-bob, Mason's line, Helmet, Safety shoes, Safety belt, Cotton hand gloves, Goggles, Reflective jackets

Do

- Describe about the basic concept of a temporary scaffolding
- Explain the benefits of a scaffolding
- Reiterate the types of temporary scaffolding

Notes for facilitation

- Use the Helper Mason PHB and refer unit 5.1 to explain Basics of Scaffolding.
- Temporary scaffolding is a temporary structure erected at a construction site to provide a safe and elevated platform for workers to perform various tasks, such as masonry work, painting, or repairs. It consists of a framework of tubes, poles, or other components that support working platforms at different levels. Scaffolding is used to access higher areas of a building or structure that are otherwise difficult to reach.
- **Scaffolding offers several benefits to Helper Masons and other construction workers:**
 - **Safety:** Provides a stable and secure platform for working at height, reducing the risk of accidents and falls.
 - **Access:** Allows easy access to various parts of a building or structure for construction,

- maintenance, and repairs.
 - **Efficiency:** Improves work efficiency by reducing the need to constantly climb up and down ladders.
 - **Space:** Creates a larger work area, enabling multiple workers to perform tasks simultaneously.
 - **Flexibility:** Scaffolding can be adjusted and customized to fit different shapes and sizes of structures.
- **There are several types of temporary scaffolding used in construction, each with its own advantages and applications:**
 - **Tube and Coupler Scaffolding:** Consists of tubes and couplers that can be connected to form various configurations, suitable for a wide range of structures.
 - **Frame Scaffolding:** Comprises vertical and horizontal frames that are easily assembled, making it versatile and efficient.
 - **System Scaffolding:** Uses prefabricated components that fit together in a modular fashion, offering quick assembly and adaptability.
 - **Suspended Scaffolding:** Hangs from ropes or cables, commonly used for work on the sides of buildings or bridges.
 - **Cantilever Scaffolding:** Extends from a structure's floor, used when ground support is limited.
 - **Mobile Scaffolding:** Equipped with wheels for easy mobility, ideal for smaller tasks and when mobility is needed.

Say

Let's engage in a practical activity that delves into the various types of temporary scaffolding used in construction. This activity will provide Helper Masons with hands-on experience in understanding the advantages and applications of each scaffolding type, contributing to their knowledge of safe and effective construction practices.

Activity

- **Purpose:** This activity aims to familiarize Helper Masons with different types of temporary scaffolding used in construction and their respective advantages and applications.
- **Resources Required:** Visual aids or images depicting each scaffolding type, flip charts, markers.
- **Tentative Duration:** 45 Minutes
- **Procedure:**
 - **Introduction:** Begin by discussing the importance of selecting the appropriate scaffolding type based on the construction requirements for safety and efficiency.

- **Types of Scaffolding Presentation:**
 - Present visual aids or images of each scaffolding type: Tube and Coupler, Frame, System, Suspended, Cantilever, and Mobile.
 - Briefly describe the characteristics, components, and applications of each type.
- **Advantages and Applications Group Activity:**
 - Divide participants into groups, assigning each group a specific scaffolding type.
 - Provide flip charts and markers to each group.
 - In their groups, participants discuss and list the advantages and primary applications of their assigned scaffolding type.
- **Advantages and Applications Sharing:**
 - Each group presents their findings to the larger group.
 - Facilitate a brief discussion after each presentation to encourage knowledge sharing.
- **Comparative Analysis:**
 - Discuss the scenarios where one type of scaffolding might be more suitable than others.
 - Engage participants in a comparative analysis of the scaffolding types based on different project requirements.
- **Q & A Session:**
 - Allow participants to ask questions and seek clarifications about the presented scaffolding types.
- **Reflection and Conclusion:**
 - Engage participants in reflecting on the activity's insights and the importance of selecting the right scaffolding type for different construction scenarios.
 - Summarize key takeaways and underscore the significance of safe and efficient construction practices.
- **Expected Outcome:** Through this activity, Helper Masons will gain a practical understanding of various types of temporary scaffolding, their advantages, and applications. This knowledge will equip them to make informed decisions when selecting scaffolding for different construction tasks, enhancing safety and efficiency on the worksite.

UNIT 5.2: Concept of Conventional Scaffolding

Unit Objectives

After the end of this unit, participants will be able to:

- Describe the material used in bamboo scaffolding
- Know how to erect and dismantle a bamboo scaffolding

Resources to be used

- **Theory**
 - **Training Kit** - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - Hammer, Spanner (set), Wrench, Pulley, Rope, Nuts and bolts, Measuring tape, Spirit level, Plumb-bob, Mason's line, Helmet, Safety shoes, Safety belt, Cotton hand gloves, Goggles, Reflective jackets

Do

- Describe the material used in bamboo scaffolding
- Know how to erect and dismantle a bamboo scaffolding

Notes for facilitation

- Use the Helper Mason PHB and refer unit 5.2 to explain Concept of Conventional Scaffolding.
- Bamboo scaffolding is a traditional and widely used method of scaffolding in some regions. It involves using bamboo as the primary material for creating the scaffolding structure. Bamboo is chosen for its strength, flexibility, and availability. In bamboo scaffolding, different lengths of bamboo poles are tied together using bamboo strips or ropes to create a scaffold frame. The joints are secured with traditional knots or lashings.
- **Erecting and dismantling bamboo scaffolding involves the following steps:**
 - **Erecting:**
 - **Site Preparation:** Choose a suitable location, ensuring a firm and level foundation for the scaffold base.
 - **Setting Base Poles:** Insert longer bamboo poles vertically into the ground to serve as the base support.

- **Building Frames:** Assemble the bamboo poles horizontally and vertically to create a sturdy scaffold frame.
- **Tying Joints:** Secure the joints using ropes, bamboo strips, or traditional knotting techniques.
- **Adding Platforms:** Place bamboo planks or boards on the frames to create working platforms at various levels.
- **Stabilizing:** Use diagonal braces and ties to provide stability to the scaffold structure.
- **Inspecting:** Perform a thorough inspection to ensure the scaffold is stable, secure, and safe for use.
- **Dismantling:**
 - **Removing Platforms:** Carefully remove the bamboo planks or boards from the working platforms.
 - **Loosening Joints:** Untie the ropes or bamboo strips securing the joints of the scaffold frames.
 - **Disassembling Frames:** Disassemble the bamboo frames in a systematic manner, starting from the top.
 - **Removing Base Poles:** Remove the longer bamboo poles used as the base support.
 - **Organizing Components:** Bundle and organize the bamboo poles and components for storage or reuse.
 - **Safe Handling:** During dismantling, ensure that workers are using appropriate personal protective equipment (PPE) and following safety guidelines.

Say

Let's dive into a practical activity that focuses on the process of erecting bamboo scaffolding. This activity will provide Helper Masons with hands-on experience in understanding the steps involved in setting up bamboo scaffolding, contributing to their knowledge of safe and effective construction practices.

Activity

- **Purpose:** This activity aims to familiarize Helper Masons with the sequential steps involved in erecting bamboo scaffolding, highlighting the importance of each step for a secure and stable structure.
- **Resources Required:** Visual aids depicting the bamboo scaffolding erection process, rope or string for knot-tying practice, bamboo strips (optional), bamboo poles (shorter lengths for demonstration), flip charts, markers.

- **Tentative Duration:** 60 Minutes
- **Procedure:**
 - **Introduction:** Begin by discussing the significance of proper scaffold erection for safety and efficient work on construction sites.
 - **Step-by-Step Presentation:**
 - Present visual aids or images illustrating the bamboo scaffolding erection process, step by step.
 - Describe each step: Site Preparation, Setting Base Poles, Building Frames, Tying Joints, Adding Platforms, Stabilizing, and Inspecting.
 - **Base Pole Insertion Practice:**
 - Demonstrate how to insert longer bamboo poles vertically into the ground.
 - Participants practice this step using shorter bamboo poles or sticks and the designated area.
 - **Frame Assembly and Knot-Tying:**
 - Discuss horizontal and vertical bamboo pole assembly to create frames.
 - Provide rope or string for participants to practice securing joints using knot-tying techniques.
 - **Platform Placement Demonstration:**
 - Demonstrate placing bamboo planks or boards on the frames to create working platforms.
 - Participants observe and discuss the proper method.
 - **Stabilization and Inspection:**
 - Explain the use of diagonal braces and ties to stabilize the scaffold.
 - Discuss the importance of thorough inspection for stability and safety.
 - **Group Discussion and Sharing:**
 - Participants discuss the challenges and key takeaways from each step.
 - Share insights about the critical nature of proper scaffold erection.
 - **Q & A Session:**
 - Allow participants to ask questions and seek clarifications about the bamboo scaffolding erection process.
 - **Reflection and Conclusion:**
 - Engage participants in reflecting on the practical insights gained from the activity.
 - Summarize key points and emphasize the importance of following each step for secure and safe bamboo scaffold erection.
- **Expected Outcome:** Through this activity, Helper Masons will acquire practical understanding of the sequential process of erecting bamboo scaffolding. They will appreciate the importance of each step in ensuring the stability, safety, and effectiveness of the scaffold for construction tasks.

UNIT 5.3: Concepts of Modular Scaffolding Systems

Unit Objectives

After the end of this unit, participants will be able to:

- Understand about types of modular scaffolding
- Summarize the components of cuplock system scaffolding
- Identify the components of frame system scaffolding

Resources to be used

- **Theory**
 - **Training Kit** - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - Hammer, Spanner (set), Wrench, Pulley, Rope, Nuts and bolts, Measuring tape, Spirit level, Plumb-bob, Mason's line, Helmet, Safety shoes, Safety belt, Cotton hand gloves, Goggles, Reflective jackets

Do

- Explain about types of modular scaffolding
- Explain the components of cuplock system scaffolding
- Explain the components of frame system scaffolding

Notes for facilitation

- Use the Helper Mason PHB and refer unit 5.3 to explain Concepts of Modular Scaffolding Systems.
- Modular scaffolding refers to scaffolding systems that are pre-fabricated and assembled using standardized components. These systems offer efficiency, versatility, and ease of assembly. Two common types of modular scaffolding are:
 - **Cuplock System Scaffolding:** This system uses vertical standards with cup-like nodes that hold horizontal ledgers and transoms. It offers quick assembly and versatility for various applications.
 - **Frame System Scaffolding:** This system comprises vertical frames and horizontal cross braces that create a strong and stable structure. Frame scaffolding is known for its simplicity and suitability for various tasks.

- **The Cuplock System Scaffolding consists of several key components:**
 - **Standards (Verticals):** Vertical tubes with cup joints that form the main vertical support.
 - **Ledgers (Horizontal):** Horizontal tubes that connect to the cup joints on the standards.
 - **Transoms:** Horizontal tubes that connect ledgers and provide support for scaffold boards.
 - **Cup Joints:** Nodes on the standards that securely hold ledgers and transoms in place.
 - **Base Jacks:** Adjustable components placed at the bottom of standards to level the scaffold on uneven ground.
 - **Top Cups and Bottom Cups:** Attach to the standards to secure the ledgers and transoms.
- **Frame System Scaffolding consists of several main components:**
 - **Vertical Frames:** Upright frames that provide vertical support and stability.
 - **Cross Braces:** Diagonal braces that connect vertical frames and add structural integrity.
 - **Coupling Pins:** Securely lock the cross braces to the vertical frames.
 - **Scaffold Boards:** Planks placed on horizontal rungs of the frames to create the working platform.
 - **Base Plates:** Flat plates placed under the vertical frames to distribute weight and stabilize the scaffold.
 - **Guardrails and Toeboards:** Safety components added to prevent falls and provide a safe working environment.

Say

Let's delve into a practical activity that focuses on the components of Frame System Scaffolding. This activity will provide Helper Masons with hands-on experience in understanding the various components that make up this scaffolding type, contributing to their knowledge of safe and effective construction practices.

Activity

- **Purpose:** This activity aims to familiarize Helper Masons with the main components of Frame System Scaffolding and their roles in creating a secure and safe working platform.
- **Resources Required:** Visual aids or images depicting each scaffolding component, flip charts, markers.
- **Tentative Duration:** 45 Minutes
- **Procedure:**
 - **Introduction:** Begin by discussing the importance of understanding the components of Frame System Scaffolding to ensure proper setup and safe usage.

- **Component Presentation:**
 - Present visual aids or images of each scaffolding component: Vertical Frames, Cross Braces, Coupling Pins, Scaffold Boards, Base Plates, Guardrails, and Toeboards.
 - Briefly describe the purpose and function of each component.
- **Component Role Play:**
 - Divide participants into small groups.
 - Assign each group a specific scaffolding component.
 - Participants discuss and list the purpose, installation process, and significance of their assigned component.
- **Component Presentation and Discussion:**
 - Each group presents their findings to the larger group.
 - Facilitate a discussion after each presentation to encourage knowledge sharing.
- **Comparative Analysis:**
 - Discuss scenarios where one component might be more critical than others for specific tasks.
 - Engage participants in analyzing the interdependence of components.
- **Q & A Session:**
 - Allow participants to ask questions and seek clarifications about the presented scaffolding components.
- **Reflection and Conclusion:**
 - Engage participants in reflecting on the insights gained about scaffolding components and their roles.
 - Summarize key takeaways and underscore the significance of proper component understanding for secure scaffolding setup.
- **Expected Outcome:** Through this activity, Helper Masons will gain practical familiarity with the components of Frame System Scaffolding. They will comprehend the roles and importance of each component in ensuring a safe and effective working platform, enhancing their ability to set up and use scaffolding systems correctly.

UNIT 5.4: Erecting and Dismantling Modular Scaffolding System

Unit Objectives

After the end of this unit, participants will be able to:

- Describe the scaffolding tools
- Use the scaffolding tools
- Erect cuplock system scaffold in correct way
- Erect frame system scaffold in correct way
- Dismantle the scaffold
- Work safely while erecting and dismantling the scaffold

Resources to be used

- **Theory**
 - Training Kit - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - Hammer, Spanner (set), Wrench, Pulley, Rope, Nuts and bolts, Measuring tape, Spirit level, Plumb-bob, Mason's line, Helmet, Safety shoes, Safety belt, Cotton hand gloves, Goggles, Reflective jackets

Do

- Describe the scaffolding tools
- Explain the usage of scaffolding tools
- Erect cuplock system scaffold in correct way
- Erect frame system scaffold in correct way
- Dismantle the scaffold
- Explain how to Work safely while erecting and dismantling the scaffold

Notes for facilitation

- Use the Helper Mason PHB and refer unit 5.4 to explain Erecting and Dismantling Modular Scaffolding System.
- Scaffolding tools are specialized tools used by construction workers to assemble, use, and dismantle scaffolding safely and efficiently. These tools include items like wrenches, hammers, pliers, safety gear, and components specific to the scaffold system being used.
- Proper use of scaffolding tools is crucial for safe and effective construction practices. Helper Masons should be trained to use these tools correctly to ensure that the scaffold is erected securely and according to safety standards.
- **Erecting a cuplock system scaffold involves these steps:**

- Set up base standards and secure them using base jacks.
- Attach ledger and transom components to the cup joints on the standards.
- Add diagonal braces for stability.
- Continue building upward by adding standards, ledgers, and transoms.
- Ensure proper alignment, levelness, and secure connections.
- Install scaffold boards and guardrails as needed for the working platform.
- **Erecting a frame system scaffold involves these steps:**
 - Set up vertical frames with proper spacing and alignment.
 - Attach cross braces to create stability and structural integrity.
 - Securely lock coupling pins to the frames and cross braces.
 - Install scaffold boards on the horizontal rungs to form the platform.
 - Add guardrails and toeboards for safety.
- **Dismantling a scaffold involves these steps:**
 - Remove scaffold boards and other platform components.
 - Carefully disassemble frames, cross braces, and other components in reverse order.
 - Organize and store components for future use.
 - Follow manufacturer guidelines and safety protocols during dismantling.
- **Safety is paramount during scaffold erection and dismantling:**
 - Wear appropriate personal protective equipment (PPE) including helmets, gloves, and harnesses.
 - Adhere to proper lifting techniques and teamwork when handling heavy components.
 - Avoid working on windy or inclement weather days.
 - Follow safe practices for working at height, including fall protection measures.
 - Ensure proper access and egress to and from the scaffold.
 - Stay clear of moving equipment and machinery during scaffold operations.

Say



Let's engage in a practical activity focused on promoting safety awareness during scaffold erection and dismantling. This activity aims to provide Helper Masons with hands-on experience in understanding and practicing essential safety measures for safeguarding themselves and their colleagues during these critical construction activities.

Activity

- **Purpose:** This activity aims to sensitize Helper Masons to the paramount importance of safety during scaffold erection and dismantling, emphasizing key safety measures and practices.
- **Resources Required:** Visual aids or images depicting safety equipment, flip charts, markers.
- **Tentative Duration:** 45 Minutes
- **Procedure:**
 - **Introduction:** Begin by highlighting the critical significance of safety during scaffold erection and dismantling to prevent accidents and ensure a secure working environment.
 - **Safety Measure Presentation:**
 - Present visual aids or images illustrating each safety measure: PPE, Proper Lifting Techniques, Weather Considerations, Fall Protection, Access and Egress, and Avoidance of Moving Equipment.
 - Describe the importance and implications of each measure.
 - **Safety Measure Role Play:**
 - Divide participants into pairs.
 - Assign each pair a specific safety measure.
 - Participants discuss and demonstrate the application of their assigned safety measure.
 - **Safety Measure Presentation and Discussion:**
 - Each pair presents their safety measure, its application, and its relevance.
 - Facilitate a discussion after each presentation to encourage insights and clarifications.
 - **Comparative Analysis:**
 - Discuss scenarios where one safety measure might take precedence over others in specific situations.
 - Engage participants in analyzing the cumulative impact of adhering to multiple safety measures.
 - **Q & A Session:**
 - Allow participants to ask questions and seek clarifications about the presented safety measures.
 - **Reflection and Conclusion:**
 - Engage participants in reflecting on the practical insights gained about scaffold safety measures.
 - Summarize the key points and emphasize the overarching importance of safety vigilance.
- **Expected Outcome:** Through this activity, Helper Masons will internalize the significance of safety during scaffold erection and dismantling. They will grasp the importance of each safety measure and how their collective adherence contributes to maintaining a secure and hazard-free work environment on construction sites.

Exercise

Key Solutions to PHB Exercise

1. The purpose of temporary scaffolding in construction projects is to provide a safe and elevated platform for workers to perform tasks at various heights. Scaffolding enables access to higher areas, supports construction activities such as masonry, painting, or maintenance, and enhances efficiency and safety by providing a stable working environment.
2. Temporary scaffolding refers to temporary structures erected at construction sites to support workers and materials during construction, repair, or maintenance tasks. Its primary function is to provide a secure and elevated working platform that allows workers to perform tasks efficiently at different heights, while ensuring safety and stability.
3. **Temporary scaffolding enhances worker safety and efficiency by:**
 - Providing secure platforms for work, reducing the risk of falls or accidents.
 - Offering better access to various parts of a building or structure.
 - Reducing the need for constant climbing up and down ladders.
 - Enabling multiple workers to work simultaneously on different tasks.
 - Offering a stable surface for tool and material placement.
4. **A conventional scaffolding system typically includes components such as:**
 - Vertical Standards or Uprights.
 - Horizontal Ledgers and Transoms.
 - Diagonal Braces for stability.
 - Scaffold Boards or Planks for the working platform.
 - Coupling Pins, Clips, or Connectors to secure components.
 - Base Plates for stability on the ground.
 - Guardrails and Toeboards for safety.
5. **Stability of a conventional scaffolding structure is ensured by:**
 - Properly anchoring the scaffold to the building or structure.
 - Placing base plates on stable ground.
 - Using diagonal braces for lateral stability.
 - Properly securing components with coupling pins or clips.
 - Following manufacturer guidelines and industry standards for assembly.
6. A modular scaffolding system improves adaptability and ease of setup by using standardized components that can be easily assembled and disassembled. This system can be customized to fit different structures and heights, making it versatile and efficient for various construction tasks.

7. Some advantages of using modular scaffolding systems include:

- Faster assembly and disassembly compared to traditional methods.
- Improved adaptability to different structures and heights.
- Reduced labor time and increased work efficiency.
- Enhanced safety due to standardized components and stable structures.
- Less material waste and better cost-effectiveness.
- Ability to meet specific project requirements with different configurations.

Notes 



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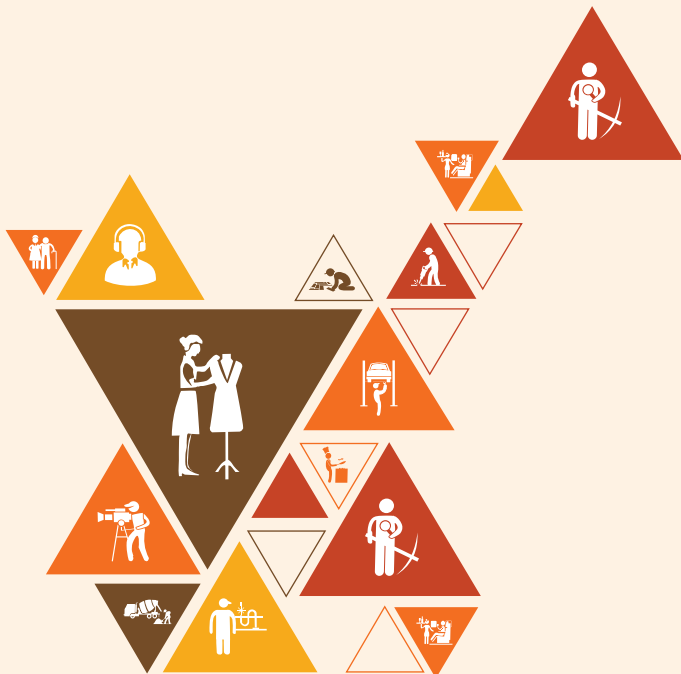
Transforming the skill landscape



6. Cement Mortar and Concrete Mix – Preparation & Curing

Unit 6.1 - Preparing Cement Mortar and Concrete Mix

Unit 6.2 - Introduction to Masonry Curing



Key Learning Outcomes

After the end of this module, participants will be able to:

1. Select and use different tools and equipment used for mixing of cement mortar/concrete mix
2. Describe different types of materials required for cement mortar and concrete mix including other bonding materials/admixtures
3. Describe ratio of different materials required for mixing mortar and concrete by volume
4. Prepare the cement mortar as per prescribed ratio
5. Prepare the concrete mix as per prescribed ratio
6. Provide brief about different admixtures used in masonry works
7. Operate hand-operated concrete mixer
8. Provide brief about various techniques and importance of curing
9. Carry out curing operation using correct method

UNIT 6.1: Preparing Cement Mortar and Concrete Mix

Unit Objectives

After the end of this unit, participants will be able to:

- Describe the scaffolding tools
- Use the scaffolding tools
- Erect cuplock system scaffold in correct way
- Erect frame system scaffold in correct way
- Dismantle the scaffold
- Work safely while erecting and dismantling the scaffold

Resources to be used

- **Theory**
 - **Training Kit** - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - Tool Box With Lock And Key, Measuring Tape/Rule, Scale, Steel Square, Trowel, Water Level, Spirit Level, Plumb Bob, Straight Edge, Mason's Hammer, String Line, Jointers, Mallets, Wedges, Screeds, Floats, Bolster Chisel, Rubber/Wooden Hammers, Spade, Sponge, Volume Box, Weighing Balance, Tile Scribes Or Hand Held Tile Cutters, Screeds, Floats , Wet-Power Saw , Electric Drills, Grinders, Vibrators , Hand Operated Concrete Mixer, Mortar Mixing Board/Mortar Pan, Safety Helmets, Hand Gloves, Safety Shoes, Safety Harness, Nose Mask

Do

- Describe the scaffolding tools
- Explain the usage of scaffolding tools
- Erect cuplock system scaffold in correct way
- Erect frame system scaffold in correct way
- Dismantle the scaffold
- Explain how to Work safely while erecting and dismantling the scaffold

Notes for facilitation

- Use the Helper Mason PHB and refer unit 6.1 to explain Preparing Cement Mortar and Concrete Mix.
- When making cement mortar, typically consisting of cement, sand, and water, Helper Masons need to select the right types of cement and aggregates (sand) and mix them in the correct proportions. For concrete mix, they need to consider cement, sand, aggregates, and water. Accurate measurement and proper mixing of these ingredients are crucial to achieve the desired strength and consistency.
- Cement has a specific setting time, which is the time it takes for the mixed cement to begin to harden and set. Helper Masons need to be aware of this setting time to ensure that they can work with the mortar or concrete mix before it becomes too stiff to apply or shape.
- To prepare cement mortar, Helper Masons need to follow the given ratio of cement, sand, and water. They measure the appropriate quantities of each ingredient, mix them thoroughly to achieve a consistent blend, and achieve the desired mortar consistency.
- Preparing concrete mix involves following the given ratio of cement, sand, aggregates, and water. Helper Masons measure and mix these components to create a homogeneous mixture suitable for the specific application, such as pouring foundations or making structural elements.
- Safety is paramount when working with cement and other chemicals. Helper Masons should:
 - Wear appropriate personal protective equipment (PPE) such as gloves and masks.
 - Avoid inhaling dust and use proper ventilation.
 - Handle chemicals carefully and avoid direct contact with skin or eyes.
 - Store chemicals in a safe and well-ventilated area.
- **Do's and Don'ts for Preparation and Use of Mortar Within Specified Time (for Helper Mason):**
 - **Do's:**
 - Do follow the specified mixing ratios for mortar and concrete.
 - Do use clean and suitable containers for mixing.
 - Do mix mortar thoroughly to achieve uniform consistency.
 - Do work efficiently to use the mortar before it sets.
 - Do protect the mortar from extreme weather conditions that can affect curing.
 - **Don'ts:**
 - Don't add excessive water to the mortar, as it can weaken the mixture.
 - Don't mix more mortar than can be used within its setting time.
 - Don't add more water to the mortar after it starts to set.
 - Don't use mortar that has begun to harden or set.

Say

Let's dive into a practical activity that focuses on understanding cement setting time and the preparation of cement mortar. This activity will provide Helper Masons with hands-on experience in comprehending the importance of setting time awareness and proper mixing techniques for achieving desired mortar consistency.

Activity

- **Purpose:** This activity aims to familiarize Helper Masons with the concept of cement setting time and the process of preparing cement mortar with the correct ratio of ingredients for effective construction work.
- **Resources Required:** Cement, sand, water, measuring tools, mixing containers, visual aids or images depicting cement consistency, flip charts, markers.
- **Tentative Duration:** 60 Minutes
- **Procedure:**
 - **Introduction:** Begin by discussing the significance of understanding cement setting time and precise mortar preparation for efficient construction work.
 - **Cement Setting Time Presentation:**
 - Present visual aids or images depicting cement consistency at different stages: from initial mix to fully set.
 - Describe the concept of cement setting time and its implications for workability.
 - **Ratio Explanation and Demonstration:**
 - Explain the correct ratio of cement, sand, and water for cement mortar.
 - Demonstrate the use of measuring tools to quantify each ingredient.
 - **Group Activity - Mortar Preparation:**
 - Divide participants into small groups.
 - Provide cement, sand, water, measuring tools, and mixing containers to each group.
 - Each group prepares cement mortar following the specified ratio and mix thoroughly.
 - **Consistency Assessment:**
 - Each group examines and discusses the consistency of the prepared mortar.
 - Groups identify whether the mixture has achieved the desired consistency.
 - **Presentation and Discussion:**
 - Each group presents their prepared mortar and discusses their observations regarding consistency.
 - Facilitate a discussion on the importance of precise mixing for optimal mortar quality.
 - **Q & A Session:**

- Allow participants to ask questions and seek clarifications about cement setting time and mortar preparation.
- **Reflection and Conclusion:**
 - Engage participants in reflecting on the practical insights gained about cement setting time and mortar preparation.
 - Summarize key takeaways, emphasizing the value of adhering to proper ratios and being mindful of cement setting time.
- **Expected Outcome:** Through this activity, Helper Masons will gain practical knowledge about cement setting time and the proper preparation of cement mortar. They will appreciate the importance of timely work with mortar and precise ingredient ratios for achieving desired consistency and efficient construction processes.

Notes



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UNIT 6.2: Introduction to Masonry Curing

Unit Objectives

After the end of this unit, participants will be able to:

- Understand the importance of curing process
- Describe the different methods used for curing
- Carry out curing in correct and efficient way
- Minimise the wastage of water

Resources to be used

- **Theory**
 - **Training Kit** - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - Tool Box With Lock And Key, Measuring Tape/Rule, Scale, Steel Square, Trowel, Water Level, Spirit Level, Plumb Bob, Straight Edge, Mason's Hammer, String Line, Jointers, Mallets, Wedges, Screeds, Floats, Bolster Chisel, Rubber/Wooden Hammers, Spade, Sponge, Volume Box, Weighing Balance, Tile Scribes Or Hand Held Tile Cutters, Screeds, Floats , Wet-Power Saw , Electric Drills, Grinders, Vibrators , Hand Operated Concrete Mixer, Mortar Mixing Board/Mortar Pan, Safety Helmets, Hand Gloves, Safety Shoes, Safety Harness, Nose Mask

Do

- Explain the importance of curing process
- Describe the different methods used for curing
- Carrying out curing in correct and efficient way
- Explain the ways to minimize the wastage of water

Notes for facilitation

- Use the Helper Mason PHB and refer unit 6.2 to explain Masonry Curing.
- The curing process is crucial for the proper development of strength and durability in concrete and mortar. Curing involves maintaining adequate moisture and temperature conditions during

the initial setting and hardening period. Proper curing prevents premature drying and cracking, ensures optimal hydration of cement particles, and contributes to the long-term performance of the construction materials.

- There are various methods used for curing, depending on the construction project and available resources. Some common methods include:
 - **Water Curing:** Keeping the surface of the concrete or mortar wet by spraying water or immersing it in water.
 - **Wet Covering:** Covering the surface with wet burlap, cloth, or mats to retain moisture.
 - **Membrane Curing:** Applying a moisture-retaining membrane or coating over the surface.
 - **Ponding:** Creating shallow water ponds on the surface and keeping them filled.
 - **Steam Curing:** Using steam to accelerate curing and increase temperature.
- To carry out curing correctly and efficiently, Helper Masons should:
 - Start the curing process immediately after the initial setting of concrete or mortar.
 - Keep the surface uniformly wet during the curing period.
 - Monitor and adjust the curing method based on weather conditions (temperature, humidity, wind).
 - Ensure that curing materials like burlap or cloth remain in contact with the surface to retain moisture.
 - Continue curing for the specified duration based on the material type and project requirements.
- Minimizing water wastage during the curing process is important for both environmental and cost reasons. Helper Masons can:
 - Use methods that allow efficient water absorption, such as wet covering or membrane curing.
 - Avoid excessive water application that leads to runoff and wastage.
 - Apply water using sprayers or controlled methods to target the curing area effectively.
 - Collect and reuse excess water when possible.

Say



Let's participate in a practical activity that centers on understanding the essential practices for proper curing of concrete and mortar. This activity aims to provide Helper Masons with hands-on experience in comprehending the importance of timely and effective curing techniques to ensure the durability and strength of construction materials.

Activity

- **Purpose:** This activity aims to familiarize Helper Masons with the critical practices for carrying out efficient and effective curing of concrete and mortar, highlighting the role of proper moisture retention and monitoring.
- **Resources Required:** Visual aids or images depicting curing techniques, burlap or cloth pieces, water spray bottles, temperature and humidity indicators, flip charts, markers.
- **Tentative Duration:** 60 Minutes
- **Procedure:**
 - **Introduction:** Begin by emphasizing the significance of proper curing in enhancing the durability and strength of construction materials.
 - **Curing Techniques Presentation:**
 - Present visual aids or images illustrating various curing techniques: Immediate Start, Uniform Moisture, Weather-Adaptive, Contact with Curing Materials, Specified Duration.
 - Explain the importance and role of each technique in effective curing.
 - **Group Activity - Curing Practice:**
 - Divide participants into groups.
 - Provide burlap or cloth pieces, water spray bottles, and temperature and humidity indicators.
 - Each group simulates curing on a small sample of concrete or mortar.
 - **Curing Method Analysis:**
 - Groups discuss their chosen techniques, reasons for selection, and challenges faced during the simulation.
 - Emphasize adaptability based on weather conditions.
 - **Scenario Discussion:**
 - Present various weather scenarios (hot and dry, rainy, windy).
 - Groups analyze and discuss how they would adjust their curing approach for each scenario.
 - **Presentation and Discussion:**
 - Each group presents their curing techniques, adaptations, and insights.
 - Facilitate a discussion on the critical nature of adapting curing methods for optimal results.
 - **Q & A Session:**
 - Allow participants to ask questions and seek clarifications about effective curing practices.
 - **Reflection and Conclusion:**

- Engage participants in reflecting on the practical insights gained about effective curing techniques.
- Summarize key takeaways, underscoring the role of proper moisture retention and monitoring for durable construction materials.
- **Expected Outcome:** Through this activity, Helper Masons will gain practical knowledge about effective curing practices for concrete and mortar. They will understand the importance of adjusting curing techniques based on weather conditions and project requirements, contributing to the longevity and quality of construction materials.

Exercise

Key Solutions to PHB Exercise

1. The primary ingredient in cement mortar is cement itself. Cement is a binding material that, when mixed with water, forms a paste that holds the other components of the mortar together.
2. Cement mortar is prepared by mixing cement, sand, and water in the appropriate proportions. The ingredients are thoroughly mixed to create a uniform paste that can be applied for various masonry purposes.
3. Sand is added to cement mortar to improve its workability, strength, and volume. Sand provides bulk to the mortar mix, enhances cohesion, reduces shrinkage, and prevents cracks from forming as the mixture dries and hardens.
4. A concrete mix unit refers to a standardized measurement system used to express the proportions of various components (cement, sand, aggregates, water) in a concrete mix. It helps ensure consistency in the mix design and construction process.
5. The standard water-cement ratio in concrete mix design varies depending on the application and requirements. However, a commonly used ratio is around 0.4 to 0.6, which means that for every unit of cement, there are 0.4 to 0.6 units of water.
6. Masonry curing is the process of maintaining adequate moisture and temperature conditions for freshly laid masonry units, such as bricks or blocks, to ensure proper hydration and strength development. Curing prevents excessive evaporation and helps the masonry achieve its desired properties.
7. Masonry curing is important because it:
 - Prevents premature drying and cracking of mortar and masonry units.
 - Ensures proper hydration of cement, leading to desired strength.
 - Improves the durability and longevity of the masonry.
 - Minimizes shrinkage and enhances the overall quality of the construction.
 - Enhances the aesthetic appearance of the finished masonry work.





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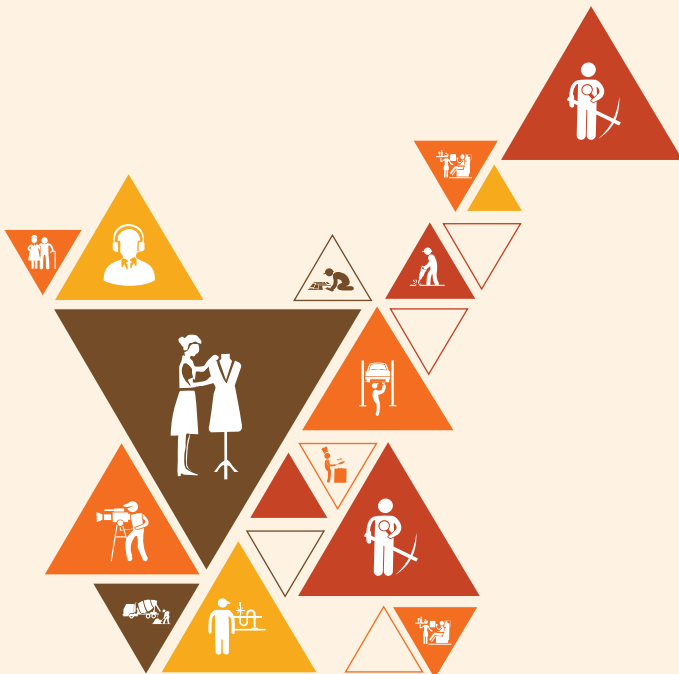
7. Maintaining a Safe, Hygienic and Secure Working Environment

Unit 7.1 - Hazards and Emergency Situations

Unit 7.2 - Safety Drills, PPEs and Fire Safety

Unit 7.3 - Hygiene and Safe Waste Disposal Practices

Unit 7.4 - Infectious Disease and Its Cure



CON/N9001

Key Learning Outcomes

After the end of this module, participants will be able to:

1. Describe the reporting procedures in cases of breaches or hazards for site safety, accidents, and emergencies as per guidelines.
2. Explain different types of safety hazards at construction sites.
3. Demonstrate how to follow emergency and evacuation procedures in case of accidents, fires, or natural calamities.
4. Discuss basic ergonomic principles as per applicability.
5. Describe the procedure for responding to accidents and other emergencies at the site.
6. Explain the importance of handling tools, equipment, and materials as per applicable norms.
7. Explain the effect of construction material on health and environments as per applicability.
8. Describe various environmental protection methods as per applicability.
9. Explain the storage requirement of waste including non-combustible scrap material and debris, combustible scrap material and debris, general construction waste and trash (non-toxic, non-hazardous), any other hazardous wastes and any other flammable wastes at the appropriate location.
10. Show how to collect, segregate and deposit construction waste into appropriate containers based on their toxicity or hazardous nature.
11. Explain how to use hazardous material in a safe and appropriate manner as per applicability.
12. Explain types of fire.
13. Describe the procedure of operating different types of fire extinguishers.
14. Show how to operate different types of fire extinguishers corresponding to various types of fires as per EHS guidelines.
15. State safety relevant to tools, tackles, and equipment as per applicability.
16. Demonstrate the use of appropriate Personal Protective Equipment (PPE) as per work requirements for Head Protection, Ear Protection, Fall Protection, Foot Protection, Face and Eye Protection, Hand and Body Protection, and Respiratory Protection (if required).
17. Demonstrate how to check and install all safety equipment as per standard guidelines.
18. List housekeeping activities relevant to the task.
19. Elucidate ways of transmission of infection Explain the ways to manage infectious risks at the workplace.
20. Describe different methods of cleaning, disinfection, sterilization, and sanitization.
21. Show how to clean and disinfect all materials, tools and supplies before and after use.
22. List the symptoms of infection like fever, cough, redness, swelling, and inflammation.

Unit 7.1: Hazards and Emergency Situations

Unit Objectives

After the end of this unit, participants will be able to:

- Understand the types of hazards at the construction sites and identify the hazards specific to the domain related works.
- Recognize the safety control measures and actions to be taken under emergency situation.
- Know the reporting procedure to the concerned authority in case of emergency situations.

Resources to be used

- **Theory**
 - Training Kit - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - Leather Hand Gloves, Jump suit, Wire brush, Hand and Leg guard leather, Safety goggles, Nose mask, Ear protection, Fire extinguishers, Sand buckets Flashback arrestors, Welding helmet, Welding glass, Fire Extinguisher, Fire prevention kit, First Aid box, Safety tags and Safety Notice board.

Do

- Explain the types of hazards at the construction sites and identify the hazards specific to the domain related works.
- Reiterate about safety control measures and actions to be taken under emergency situation.
- Share reporting procedure to the concerned authority in case of emergency situations.

Notes for facilitation

- Use the Helper Mason PHB and refer unit 7.1 to explain Hazards and Emergency Situations.
- Types of Hazards at Construction Sites (Including Domain-Related Hazards for Helper Masons):
Construction sites present various hazards, including but not limited to:
 - Physical Hazards: Falling objects, machinery, excavation risks.
 - Chemical Hazards: Exposure to hazardous substances, chemicals, or gases.
 - Biological Hazards: Exposure to infectious agents, mold, or bacteria.
 - Ergonomic Hazards: Strain from lifting, repetitive motions, or awkward postures.

- Electrical Hazards: Contact with live wires or faulty electrical equipment.
- Fire and Explosion Hazards: Flammable materials, faulty wiring, combustible gases.
- Domain-Related Hazards for Helper Masons might include:
 - Falling Hazards: Working at heights without proper fall protection.
 - Manual Handling Hazards: Lifting heavy materials improperly.
 - Hazardous Substances: Exposure to cement dust, chemicals in mortar, etc.
 - Tool and Equipment Hazards: Misuse of tools, lack of proper maintenance.
- Recognizing Safety Control Measures and Emergency Actions:
 - Safety Control Measures: To mitigate hazards at construction sites, the following safety control measures can be taken:
 - Personal Protective Equipment (PPE).
 - Training: Ensure workers are trained in proper handling of tools, equipment, and materials to prevent accidents.
 - Safe Work Practices.
 - Ventilation and Dust Control.
 - Emergency Actions: In case of emergency situations at the construction site, follow these actions:
 - Evacuation.
 - First Aid.
 - Emergency Contacts.
 - Reporting Procedures in Emergency Situations:
 - Internal Communication: Notify your immediate supervisor or project manager about the emergency situation.
 - Established Protocol: Follow the organization's established protocol for reporting emergencies, including specific contact persons or numbers.
 - Documentation: If safe to do so, document the details of the emergency, including the time, location, nature of the incident, and any injuries.
 - Cooperate with Authorities: Provide accurate information to emergency responders and cooperate with their instructions.

Say



Let's engage in a practical activity focused on the reporting procedures that a Helper Mason should follow during emergency situations. This activity underscores the importance of effective communication and coordination to ensure the safety and well-being of all individuals on the construction site.

Activity



- **Purpose:** This activity aims to provide Helper Masons with hands-on experience in understanding and practicing the reporting procedures essential for effective emergency response.
- **Resources Required:** Scenario cards describing emergency situations, writing materials.
- **Tentative Duration:** 45 Minutes
- **Procedure:**
 - **Introduction:** Begin by emphasizing the significance of prompt and accurate reporting during emergencies to maintain a safe work environment.
 - **Scenario Distribution:** Distribute scenario cards, each depicting a unique emergency situation, to participants.
 - **Internal Communication Role Play:**
 - Form pairs among participants.
 - Assign roles in each pair: one as the Helper Mason and the other as the supervisor or project manager.
 - Helper Masons practice communicating the emergency to their supervisor using the established reporting procedures.
 - **Discussion on Established Protocol:**
 - Gather participants for a discussion about the organization's established protocol for reporting emergencies.
 - Emphasize the significance of adhering to these protocols for an organized response.
 - **Documentation Practice:**
 - Participants individually document the specifics of the emergency scenario assigned to them.
 - They note down the time, location, incident nature, and any injuries if applicable.
 - **Cooperation with Authorities Exercise:**
 - Present a scenario involving cooperation with emergency responders.
 - Participants engage in role-play, providing accurate information and following instructions from the responders.
 - **Group Discussion and Sharing:**
 - Participants share their experiences and insights from the role-playing exercises.
 - Facilitate a discussion on challenges faced and best practices for reporting

emergencies.

- Reflection and Conclusion:
 - Engage participants in reflecting on the significance of precise reporting for maintaining safety during emergencies.
 - Summarize the key learnings and underscore the importance of following reporting procedures.
- **Expected Outcome:** Through this activity, Helper Masons will gain practical familiarity with reporting procedures during emergency situations. They will comprehend the importance of effective communication, documentation, and cooperation with authorities to ensure the safety and well-being of themselves and their colleagues on the construction site.

Notes



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Unit 7.2: Safety Drills, PPEs and Fire Safety

Unit Objectives

After the end of this unit, participants will be able to:

- Explain the classes of fire and types of fire extinguishers.
- Demonstrate the operating procedure of the fire extinguishers.
- Explain the importance of participation of workers in safety drills.
- List out basic medical tests required for working at construction site.
- Explain the purpose and importance of vertigo test at construction site.
- Explain the types and benefits of basic ergonomic principles, which should be adopted while carrying out specific task at the construction sites.
- Demonstrate use of PPEs as per work requirements.

Resources to be used

- **Theory**
 - Training Kit - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - Leather Hand Gloves, Jump suit, Wire brush, Hand and Leg guard leather, Safety goggles, Nose mask, Ear protection, Fire extinguishers, Sand buckets Flashback arrestors, Welding helmet, Welding glass, Fire Extinguisher, Fire prevention kit, First Aid box, Safety tags and Safety Notice board.

Do

- Explain the classes of fire and types of fire extinguishers.
- Demonstrate the operating procedure of the fire extinguishers.
- Explain the importance of participation of workers in safety drills.
- Enlist basic medical tests required for working at construction site.
- Explain the purpose and importance of vertigo test at construction site.
- Explain the types and benefits of basic ergonomic principles, which should be adopted while carrying out specific task at the construction sites.
- Demonstrate use of PPEs as per work requirements.

Notes for facilitation

- Use the Helper Mason PHB and refer unit 7.2 to explain Safety Drills, PPEs and Fire Safety.
- **Classes of Fire:** Fires are classified into different classes based on the type of fuel involved:
 - **Class A:** Fires involving common combustible materials like wood, paper, and cloth.
 - **Class B:** Fires involving flammable liquids, gases, or greases.
 - **Class C:** Fires involving energized electrical equipment.
 - **Class D:** Fires involving combustible metals.
 - **Class K:** Fires involving cooking oils and fats, commonly found in kitchens.
- **Types of Fire Extinguishers:** Different types of fire extinguishers are designed to handle specific classes of fire:
 - **Water Extinguishers (Class A):** Suitable for Class A fires, but not for fires involving flammable liquids or electrical equipment.
 - **Foam Extinguishers (Class A and B):** Effective on Class A and B fires, but not for electrical fires.
 - **Dry Powder Extinguishers (Class A, B, C, and D):** Suitable for a range of fires, including electrical fires and flammable liquids.
 - **CO2 Extinguishers (Class B and Electrical Fires):** Effective for flammable liquid and electrical fires, but not for Class A fires.
 - **Wet Chemical Extinguishers (Class K):** Specifically designed for kitchen fires involving cooking oils and fats.
- **Operating Procedure of Fire Extinguishers:**
 - **Pull:** Pull the pin to break the seal and unlock the operating lever.
 - **Aim:** Aim the nozzle at the base of the fire where the fuel source is.
 - **Squeeze:** Squeeze the operating lever to release the extinguishing agent.
 - **Sweep:** Sweep the nozzle from side to side while directing the agent at the base of the fire until it's extinguished.
- **Importance of Participation in Safety Drills:** Participation in safety drills is important for several reasons:
 - **Familiarity:** Workers become familiar with evacuation routes and emergency procedures.
 - **Response Practice:** Workers practice how to respond to emergencies, minimizing confusion during real incidents.
 - **Efficiency:** Regular drills improve the efficiency of evacuation and emergency response.
 - **Identification of Weaknesses:** Drills help identify areas that need improvement in the emergency plan.
- **Basic Medical Tests Required for Construction Site:** Common medical tests for construction site workers include:
 - **Physical Examination:** Overall health assessment.
 - **Vision and Hearing Tests:** Ensuring good visual and auditory health.

- **Lung Function Test:** Assessing respiratory health.
- **Blood Pressure and Heart Rate Check:** Monitoring cardiovascular health.
- **Purpose and Importance of Vertigo Test:** A vertigo test assesses a worker's balance and susceptibility to dizziness, which is crucial for working at heights. Vertigo can lead to accidents and falls, making this test vital for maintaining site safety.
- **Types and Benefits of Basic Ergonomic Principles:** Ergonomic principles for construction tasks include proper lifting techniques, maintaining neutral body positions, and using suitable tools. Benefits include reducing strain, preventing musculoskeletal injuries, and enhancing overall worker well-being.
- **Demonstrating Use of PPEs:** Proper PPE usage involves:
 - Selection: Choose the appropriate PPE for the task.
 - Fitting: Ensure PPE fits correctly and comfortably.
 - Wearing: Wear PPE consistently throughout the task.
 - Adjusting: Make necessary adjustments for comfort and effectiveness.
 - Maintaining: Regularly inspect and maintain PPE to ensure it functions properly.
- Using PPE correctly safeguards workers from potential hazards like head injuries, respiratory issues, and more, contributing to a safer work environment for Helper Mason.

Activity -1



Conduct a role play activity on following emergency procedure in case of accidental fire at work place.

- Ask the participants to assemble at a designated place.
- Distribute the 'Practical Activity Format' which includes task, duration allowed, specific instructions, method statements, etc.
- Explain the purpose and duration of the activity.
- Set guidelines pertaining to discipline and expected tasks.
- Ask two persons who are very much interactive to participate in the role play.
- Explain the roles to each of them.
- Rotate the roles after completing one cycle.

Sub Activity	Time	Resources
Start the fire alarm	1 hour	Stationary items, Fire extinguisher, wood and paper pieces, match box
Use fire extinguisher	6 hours	
Call for medical help and carryout primary first aid for the injured person	2 hours	
Instruct co-workers to gather at the collection point	2 hours	

Table 7.2.1 - General safety at a construction site

Specific Instructions

- Select four persons from the group.
- Name the persons selected as Person A, B, C and D.
- Explain and demonstrate the method to perform the sub activities.
- Consider Person A to be a Helper Mason and the rest are co-workers.
- Start the role play and check whether it is happening as per the plan.
- Guide closely wherever needed.
- Complete the activity as per scheduled time.
- Ask the watching group to explain the steps that are performed.
- Clarify doubts, if any.

Activity -2



Conduct a skill practice activity on using ladder safely at heights with proper PPE.

- Ask the participants to assemble at a designated place.
- Distribute the 'Practical Activity Format' which includes task, duration allowed, specific instructions, method statements, etc.
- List and explain the safety guidelines followed at heights.
- Explain the purpose and duration of the activity.
- Set guidelines pertaining to discipline and expected tasks.
- Maximum duration mentioned in the below table is for extensive practice and corresponding guidance until the skill is acquired by the participants.

Sub Activity	Time	Resources
Practice wearing PPE	2 hours	Ladder, PPE
Erect the ladder	2 hours	
Practice climbing the ladder safely	2 hours	

Table 7.2.2 – Working at heights

Specific Instructions

- Show the PPE matrix that has to be followed at a construction site.
- Demonstrate the standard procedure for wearing the PPE.
- Demonstrate the important checks that are to be performed while erecting the ladder.
- Ask the participants to practice wearing PPE, check and ensure that there is no deviation of standard procedure.
- Ask the participant to practice using ladder.
- Guide and correct the participants wherever necessary.
- List the advantages of using PPE.
- Clarify doubts, if any.

Unit 7.3 - Hygiene and Safe Waste Disposal Practices

Unit Objectives

After the end of this unit, participants will be able to:

- Follow the practices to maintain personal hygiene, workplace hygiene and site/ workplace sanitization
- Understand the importance of housekeeping works
- Keep an eye on safe housekeeping practices
- Understand different types of waste at construction sites and their disposal method
- Know safe waste disposal practices followed at construction site

Resources to be used

- **Theory**
 - **Training Kit** - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - Leather Hand Gloves, Jump suit, Wire brush, Hand and Leg guard leather, Safety goggles, Nose mask, Ear protection, Fire extinguishers, Sand buckets Flashback arrestors, Welding helmet, Welding glass, Fire Extinguisher, Fire prevention kit, First Aid box, Safety tags and Safety Notice board.

Do

- Explain the practices to maintain personal hygiene, workplace hygiene and site/ workplace sanitization
- Describe the importance of housekeeping works
- Discuss the safe housekeeping practices and ask them to follow
- Explain different types of waste at construction sites and their disposal method
- Explain safe waste disposal practices followed at construction site

Notes for facilitation

- Use the Helper Mason PHB and refer unit 7.3 to explain Hygiene and Safe Waste Disposal Practices.
- **Personal Hygiene:** Maintaining personal hygiene involves practices such as washing hands before and after work, wearing clean and appropriate clothing, and using personal protective equipment (PPE) to prevent contamination and protect oneself from hazards.
- **Workplace Hygiene:** Workplace hygiene includes keeping work areas clean, organized, and free from hazards. Regular cleaning of tools, equipment, and surfaces helps prevent accidents, maintain efficiency, and promote a healthy work environment.
- **Site Sanitization:** Site sanitization involves cleaning and disinfecting shared areas to prevent the spread of germs and ensure a safe working environment. This is especially important in light of health concerns and global events.
- **Importance of Housekeeping Works:** Housekeeping works are crucial in the construction industry for several reasons:
 - **Safety:** A clean and organized workspace reduces the risk of slips, trips, falls, and other accidents.
 - **Efficiency:** Proper organization of tools, materials, and equipment improves work efficiency.
 - **Prevention:** Regular cleaning prevents the buildup of dust, debris, and potential fire hazards.
 - **Morale:** A clean and organized work environment boosts worker morale and job satisfaction.
- **Safe Housekeeping Practices:**
 - **Daily Clean-up:** Clean-up work areas at the end of each day to ensure a fresh start the next day.
 - **Tool Storage:** Properly store tools, equipment, and materials after use to prevent tripping hazards and damage.
 - **Waste Disposal:** Dispose of waste properly and promptly to prevent clutter and hygiene issues.
- **Different Types of Waste at Construction Sites and Their Disposal:**
 - **General Waste:** Regular construction debris like paper, packaging, and non-hazardous materials.
 - **Hazardous Waste:** Includes chemicals, solvents, paints, and materials that pose health or environmental risks.
 - **Electronic Waste:** Old or broken electronic equipment, requiring proper disposal due to environmental concerns.
- **Safe Waste Disposal Practices at Construction Site:**
 - **Separation:** Segregate waste into different categories for appropriate disposal.
 - **Labelling:** Clearly label hazardous waste containers to prevent accidents.
 - **Storage:** Store waste in designated areas to avoid contamination and health hazards.
 - **Legal Compliance:** Follow local regulations and guidelines for waste disposal.
- Maintaining personal and workplace hygiene, implementing proper housekeeping practices, and ensuring safe waste disposal contribute to a safer and more organized construction site environment, benefitting both workers and the overall project.

Activity

Safe Disposal of Waste

Conduct a role play activity.

- Ask the participants to assemble at a designated place.
- Distribute the 'Practical Activity Format' which includes task, duration allowed, specific instructions, method statements, etc.
- Explain the purpose and duration of the activity.
- Set guidelines pertaining to discipline and expected tasks.
- Ask two persons who are very much interactive to participate in the role play.
- Explain the roles to each of them.
- Rotate the roles after completing one cycle.

Sub Activity	Time	Resources
Practice wearing PPE	1 hour	Waste containers, masonry pan, sample construction waste
Segregate the Wastes	2 hours	
Dispose the waste in the allocated container	2 hours	

Table 7.3.1 – Safe disposal of waste

Specific Instructions

- Ensure the participants are wearing the PPE properly.
- Select two persons from the group who are effective in communication
- Consider one as helper and the other as mason, now ask the helper to deposit the waste in one location and place the containers at another location.
- Ask the mason to instruct the helper to segregate or differentiate the type of wastes
- Then ask the mason to tell the helper to transfer the segregated waste with the help of masonry pan.
- Ensure that both the persons communicate properly by giving hints in between.
- Tell them to complete the activity on the speculated time and ensure that the wastes are properly placed in the containers and it is secured properly.

Unit 7.4: Infectious Disease and Its Cure

Unit Objectives

After the end of this unit, participants will be able to:

- Know different types of infectious disease that can spread/ originate at a construction site
- Understand the ways of transmission of the various infectious disease.
- Recognize the methods to check the spread of the infectious disease.
- Understand the symptoms and cure of the various infectious disease.
- Apprehend the procedure to report to the concerned authority regarding the outbreak/ hazard of any infectious disease/ pandemic.

Resources to be used

- **Theory**
 - Training Kit - Trainer Guide & Participant Handbook, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films.
- **Practical**
 - Leather Hand Gloves, Jump suit, Wire brush, Hand and Leg guard leather, Safety goggles, Nose mask, Ear protection, Fire extinguishers, Sand buckets Flashback arrestors, Welding helmet, Welding glass, Fire Extinguisher, Fire prevention kit, First Aid box, Safety tags and Safety Notice board.

Do

- Clarify different types of infectious disease that can spread/ originate at a construction site
- Explain the ways of transmission of the various infectious disease.
- Mention the methods to check the spread of the infectious disease.
- Explain the symptoms and cure of the various infectious disease.
- Apprehend the procedure to report to the concerned authority regarding the outbreak/ hazard of any infectious disease/ pandemic.

Notes for facilitation

- Use the Helper Mason PHB and refer unit 7.4 to explain Infectious Disease and Its Cure.
- Infectious diseases that can spread or originate at construction sites include:
 - **Respiratory Infections:** Such as the flu, common cold, and COVID-19.

- **Skin Infections:** Like bacterial infections, fungal infections, and rashes.
- **Gastrointestinal Infections:** Including foodborne illnesses due to poor hygiene.
- **Vector-Borne Diseases:** Like mosquito-borne diseases (e.g., Zika, dengue) due to stagnant water.
- **Ways of Transmission of Infectious Diseases:**
 - **Airborne Transmission:** Respiratory infections can spread through respiratory droplets released when an infected person coughs, sneezes, or talks.
 - **Direct Contact:** Skin infections can be transmitted through direct skin-to-skin contact or contact with contaminated surfaces.
 - **Fecal-Oral Route:** Gastrointestinal infections can spread through contaminated food, water, or surfaces.
 - **Vector-Borne Transmission:** Insects like mosquitoes can carry and transmit diseases from person to person.
- **Methods to Check the Spread of Infectious Diseases:**
 - **Hand Hygiene:** Regularly washing hands with soap and water or using hand sanitizers.
 - **Respiratory Hygiene:** Covering mouth and nose when coughing or sneezing.
 - **Personal Protective Equipment (PPE):** Wearing appropriate PPE like masks and gloves.
 - **Disinfection:** Regularly cleaning and disinfecting surfaces and shared equipment.
- **Understanding Symptoms and Cure of Infectious Diseases:**
 - **Respiratory Infections:** Symptoms include fever, cough, sore throat, and shortness of breath. Treatment includes rest, fluids, and in severe cases, medical attention.
 - **Skin Infections:** Symptoms include redness, swelling, itching, and rashes. Treatment depends on the type of infection and may involve antibiotics or antifungal medications.
 - **Gastrointestinal Infections:** Symptoms include nausea, vomiting, diarrhea, and abdominal pain. Treatment involves staying hydrated and in severe cases, medical intervention.
 - **Vector-Borne Diseases:** Symptoms vary based on the disease. Treatment ranges from supportive care to specific antiviral or antibiotic medications.
- **Reporting Infectious Disease Outbreaks to Concerned Authorities:**
 - **Immediate Reporting:** If an infectious disease outbreak is suspected, immediately inform your supervisor, manager, or the designated health and safety personnel.
 - **Follow Protocols:** Follow the organization's protocols for reporting infectious diseases or pandemics, including informing co-workers who may have been exposed.
 - **Health Authorities:** If necessary, local health authorities should be contacted to ensure proper containment and response.
- Understanding, preventing, and reporting infectious diseases is crucial to maintaining a healthy and safe working environment in the Masonry industry. It protects both workers and the community from potential health risks.

Say

Let's participate in a practical activity focused on the reporting procedures that a Helper Mason should follow in the event of an infectious disease outbreak. This activity highlights the critical importance of swift and accurate reporting to maintain the health and safety of everyone on the construction site.

Activity

- **Purpose:** This activity aims to provide Helper Masons with hands-on experience in understanding and practicing the reporting procedures necessary for responding effectively to infectious disease outbreaks.
- **Resources Required:** Scenario cards depicting infectious disease outbreak situations, writing materials.
- **Tentative Duration:** 45 Minutes
- **Procedure:**
 - **Introduction:** Begin by discussing the vital role of immediate and accurate reporting during infectious disease outbreaks to safeguard the health of all individuals on the construction site.
 - **Scenario Distribution:** Distribute scenario cards, each portraying a distinct infectious disease outbreak situation, to participants.
 - **Immediate Reporting Role Play:**
 - Form pairs among participants.
 - **Assign roles:** one participant as the Helper Mason and the other as the supervisor or health and safety personnel.
 - Helper Masons practice promptly informing their supervisor or designated personnel about the infectious disease outbreak in their assigned scenario.
 - **Discussion on Protocol Adherence:**
 - Gather participants for a discussion about the organization's protocols for reporting infectious diseases or pandemics.
 - Emphasize the importance of following these protocols for effective containment.
 - **Health Authorities Interaction Exercise:**
 - Present a scenario requiring interaction with local health authorities.
 - Participants engage in role-play, contacting health authorities if necessary to ensure proper response and containment measures.
 - **Group Discussion and Sharing:**

- Participants share their experiences and insights from the role-playing exercises.
- Facilitate a discussion on challenges faced and the significance of accurate reporting during infectious disease outbreaks.
- Reflection and Conclusion:
 - Engage participants in reflecting on the critical role of reporting procedures in safeguarding the health of the construction site community.
 - Summarize the key takeaways and underline the importance of swift reporting and following established protocols.
- **Expected Outcome:** Through this activity, Helper Masons will gain practical understanding of reporting infectious disease outbreaks. They will recognize the significance of immediate reporting, protocol adherence, and cooperation with health authorities in ensuring the safety and health of themselves and their colleagues on the construction site.

Exercise

Key Solutions to PHB Exercise

1. Types of hazards in the construction industry:

- **Physical Hazards:** Such as falling objects, moving machinery, noise, and vibration.
- **Chemical Hazards:** Exposure to hazardous substances like asbestos, solvents, and toxic gases.
- **Biological Hazards:** Exposure to pathogens and biological agents, especially in excavation and waste handling.
- **Ergonomic Hazards:** Poor ergonomics leading to musculoskeletal disorders due to repetitive motions, lifting heavy loads, or awkward postures.
- **Psychosocial Hazards:** Stress, long working hours, and poor work-life balance.
- **Electrical Hazards:** Exposed wiring, faulty equipment, and potential for electric shock.
- **Fire and Explosion Hazards:** Due to flammable materials, welding operations, or electrical faults.

2. Key steps in handling emergencies:

- **Assess the Situation:** Evaluate the nature and severity of the emergency.
- **Notify:** Immediately inform supervisors and relevant personnel.
- **Evacuate:** If necessary, evacuate the area or site safely.
- **Provide First Aid:** Administer first aid or call for medical help as needed.
- **Report to Authorities:** Report the incident to relevant authorities as required.

3. Basic principles of first aid and training:

- Assess the situation, ensure safety, and call for professional medical help if needed.
- Provide CPR, if trained, to restore breathing and circulation.
- Control bleeding, immobilize fractures, and provide comfort to the injured.
- Training involves hands-on practice, simulations, and guidance from certified trainers.

4. Fire safety measures at a construction site:

- Install and maintain fire extinguishers at strategic locations.
- Train workers on how to use fire extinguishers properly.
- Establish evacuation routes and assembly points.

- Conduct regular fire drills to ensure everyone is familiar with procedures.
- Store flammable materials safely and adhere to electrical safety protocols.

5. Importance of PPE and care practices:

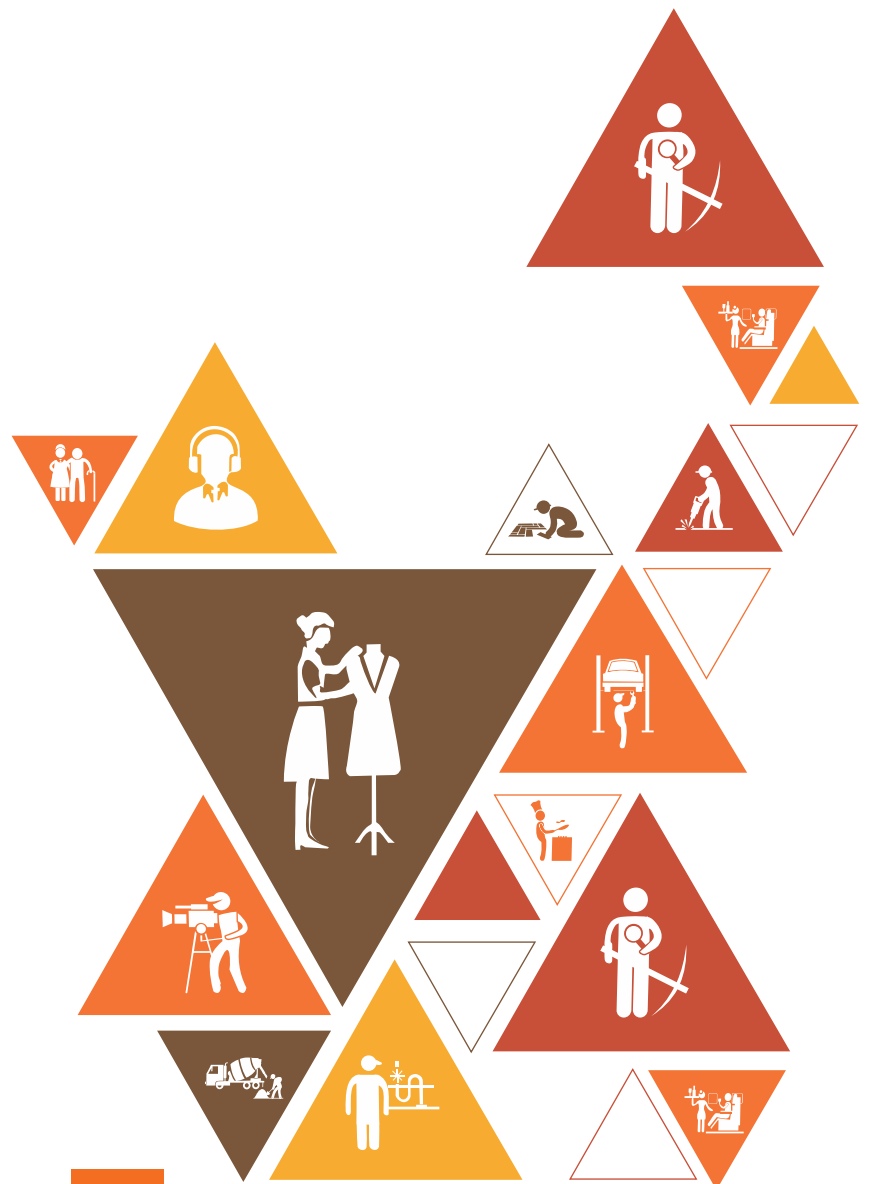
- PPE protects workers from hazards like falling debris, chemicals, and noise.
- Essential PPE includes helmets, safety glasses, gloves, high-visibility clothing, and respiratory protection.
- Care involves regular inspection, cleaning, proper storage, and replacement when damaged.

6. Implementing good housekeeping practices:

- Store tools and equipment properly.
- Keep walkways clear of debris and obstacles.
- Dispose of waste in designated containers.
- Maintain clean and organized work areas to prevent accidents.

7. Safe waste disposal practices:

- Segregate waste into different categories like hazardous, non-hazardous, and recyclable.
- Use appropriate containers for different types of waste.
- Dispose of hazardous waste according to regulations.
- Implement recycling programs for materials like metal, plastic, and paper.
- Educate workers about proper waste disposal to prevent environmental pollution and health hazards.





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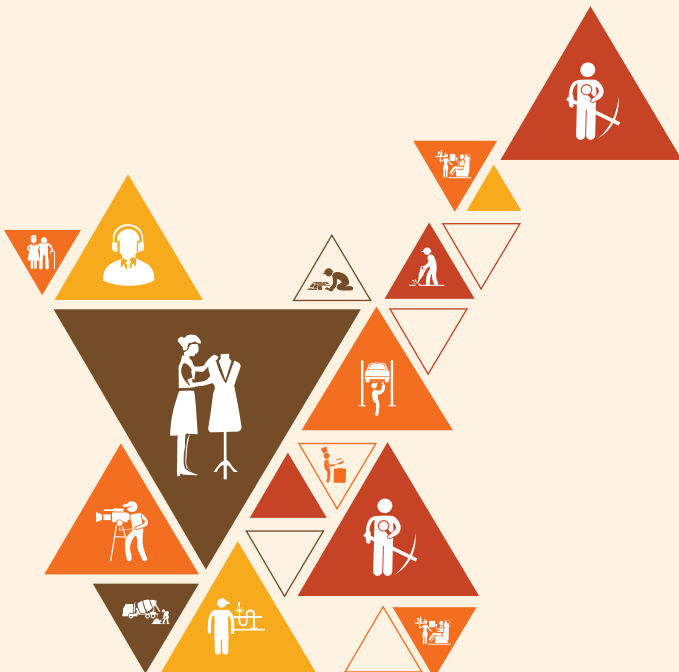


8. Employability Skills (30 Hours)

It is recommended that all trainings include the appropriate Employability skills Module. Content for the same can be accessed

<https://www.skillindiadigital.gov.in/content/list>

Scan the QR code below to access the ebook



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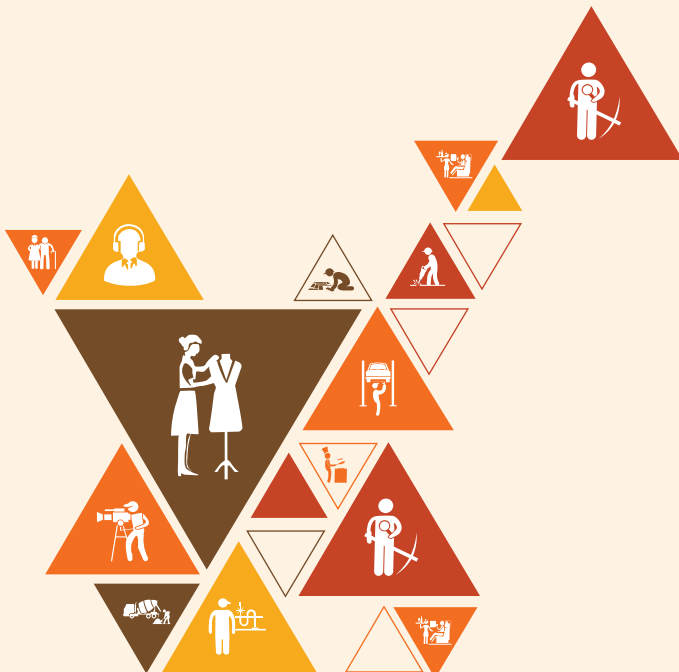


9. Annexures

Annexure I - Training Delivery Plan

Annexure II - Assessment Criteria

Annexure III - QR Codes –Video Links



Annexure I

Training Delivery Plan

Training Delivery Plan			
Program Name:	Helper Mason		
Qualification Pack Name & Ref. ID	CON/Q0101		
Version No.	4	Version Update Date	31/08/2023
Prerequisites to Training (if any)	No formal education prescribed. OR May require ability to read and write for some qualifications		
Training Outcomes	<p>After completing this program, participants will be able to:</p> <ul style="list-style-type: none"> • Erect and dismantle temporary scaffold up to 3.6 - meter height • Handle, shift and store masonry tools, equipment and materials • Prepare cement and mortar concrete mixture, and undertake curing • Carry out manual earthwork at construction sites • Work according to personal health, safety and environment protocols at construction site • Employability Skills 		

Sl. No.	Module	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools/ Aids	Duration (hours)
1	Introduction of Construction Sector and Job Role	Purpose, Benefits of the Training Programme	Participant will be able to, <ul style="list-style-type: none"> • Explain the purpose of training. 	Bridge Module	Interactive Lecture	PPT	2
		Introduction and modernization of construction sector	Participant will be able to, <ul style="list-style-type: none"> • Explain about construction sector in India. • Explain modernization construction sector in India. 				2
		Role and duties of a helper mason	Participant will be able to, <ul style="list-style-type: none"> • Masonry works in the Construction Sector 				2
2	Generic Skills	Basic mathematical calculation	Participant will be able to, <ul style="list-style-type: none"> • The different types of systems of measurement 		Interactive Lecture	PPT	2
		The different types of shapes	Participant will be able to, <ul style="list-style-type: none"> • The conversion of measurements 				2
		The perimeter of a square, rectangle, triangle and circle	Participant will be able to, <ul style="list-style-type: none"> • The measuring tape in imperial & metric system 				2
		Different types of systems of measurement	Participant will be able to, <ul style="list-style-type: none"> • The different types of systems of measurement 				2
		Conversion of measurements	Participant will be able to, <ul style="list-style-type: none"> • The conversion of measurements 				2
		Reading a measuring tape	Participant will be able to, <ul style="list-style-type: none"> • The measuring tape in imperial & metric system 				2

3	Tools, Materials and Consumables	Basic masonry hand tools and equipment	Participant will be able to, <ul style="list-style-type: none"> Basic masonry hand tools and equipment 	CON/N0102, PC1 to PC17, KA1 to KA5, KB1 to KB20	Inter-active Lecture	PPT	4
		Basic hand tools and equipment	Participant will be able to, <ul style="list-style-type: none"> Basic hand tools and equipment 	CON/N0102, PC1 to PC17, KA1 to KA5, KB1 to KB20			4
		Maintain and protect tools and equipment	Participant will be able to, <ul style="list-style-type: none"> Maintain and protect tools and equipment 	CON/N0102, PC1 to PC17, KA1 to KA5, KB1 to KB20			4
		Different types of construction materials	Participant will be able to, <ul style="list-style-type: none"> Different types of construction materials 	CON/N0102, PC1 to PC17, KA1 to KA5, KB1 to KB20			4
		Different types of construction materials	Participant will be able to, <ul style="list-style-type: none"> Different types of construction materials 	CON/N0102, PC1 to PC17, KA1 to KA5, KB1 to KB20			4
		Handle different materials at construction site	Participant will be able to, <ul style="list-style-type: none"> Handle different materials at construction site 	CON/N0102, PC1 to PC17, KA1 to KA5, KB1 to KB20			4
		Store different materials at construction site	Participant will be able to, <ul style="list-style-type: none"> Store different materials at construction site 	CON/N0102, PC1 to PC17, KA1 to KA5, KB1 to KB20			4
		Take safety precautions while handling and storing the construction materials	Participant will be able to, <ul style="list-style-type: none"> Take safety precautions while handling and storing the construction materials 	CON/N0102, PC1 to PC17, KA1 to KA5, KB1 to KB20			4

4	Carrying Out Earth-work Manually (CON/N0104)	Discuss the operations done in earthwork	Participant will be able to, <ul style="list-style-type: none"> Discuss the operations done in earthwork 	CON/N0104, PC1 to PC16, KA1 to KA4, KB1 to KB7	Inter-active Lecture	PPT	4
		Carry out preparatory work prior to earth-work	Participant will be able to, <ul style="list-style-type: none"> Carry out preparatory work prior to earthwork 	CON/N0104, PC1 to PC16, KA1 to KA4, KB1 to KB7	Demonstration and practice	Required Tools & Equipments	4
		Excavate the earth manually like digging, trenching	Participant will be able to, <ul style="list-style-type: none"> Excavate the earth manually like digging, trenching 	CON/N0104, PC1 to PC16, KA1 to KA4, KB1 to KB7			4
		Carry out the dressing work after excavation job	Participant will be able to, <ul style="list-style-type: none"> Carry out the dressing work after excavation job 	CON/N0104, PC1 to PC16, KA1 to KA4, KB1 to KB7			4
		Identify the Do's and Don'ts in excavation	Participant will be able to, <ul style="list-style-type: none"> Identify the Do's and Don'ts in excavation 	CON/N0104, PC1 to PC16, KA1 to KA4, KB1 to KB7			4
		Understand the importance of backfilling	Participant will be able to, <ul style="list-style-type: none"> Understand the importance of backfilling 	CON/N0104, PC1 to PC16, KA1 to KA4, KB1 to KB7			4
		Carry out backfilling work effectively	Participant will be able to, <ul style="list-style-type: none"> Carry out backfilling work effectively 	CON/N0104, PC1 to PC16, KA1 to KA4, KB1 to KB7			4
		Understand the importance of compaction	Participant will be able to, <ul style="list-style-type: none"> Understand the importance of compaction 	CON/N0104, PC1 to PC16, KA1 to KA4, KB1 to KB7			4

		Carry out compacting work effectively	Participant will be able to, <ul style="list-style-type: none"> Carry out compacting work effectively 	CON/ N0104, PC1 to PC16, KA1 to KA4, KB1 to KB7			4
		Do's and Don'ts in backfilling and compaction	Participant will be able to, <ul style="list-style-type: none"> Do's and Don'ts in backfilling and compaction 	CON/ N0104, PC1 to PC16, KA1 to KA4, KB1 to KB7			4
5	Erect and Dismantle Temporary Scaffolding (CON/ N0101)	Basic concept of a temporary scaffolding	Participant will be able to, <ul style="list-style-type: none"> Basic concept of a temporary scaffolding 	CON/ N0101, PC1 to PC12, KA1 to KA6, KB1 to KB11	Interactive Lecture	PPT	4
		Benefits of a scaffolding	Participant will be able to, <ul style="list-style-type: none"> Benefits of a scaffolding 	CON/ N0101, PC1 to PC12, KA1 to KA6, KB1 to KB11	Demonstration and practice	Required Tools & Equipments	4
		Types of temporary scaffolding	Participant will be able to, <ul style="list-style-type: none"> Types of temporary scaffolding 	CON/ N0101, PC1 to PC12, KA1 to KA6, KB1 to KB11			4
		Material used in bamboo scaffolding	Participant will be able to, <ul style="list-style-type: none"> Material used in bamboo scaffolding 	CON/ N0101, PC1 to PC12, KA1 to KA6, KB1 to KB11			4
		How to erect and dismantle a bamboo scaffolding	Participant will be able to, <ul style="list-style-type: none"> How to erect and dismantle a bamboo scaffolding 	CON/ N0101, PC1 to PC12, KA1 to KA6, KB1 to KB11			4
		About types of modular scaffolding	Participant will be able to, <ul style="list-style-type: none"> About types of modular scaffolding 	CON/ N0101, PC1 to PC12, KA1 to KA6, KB1 to KB11			4

	Compo- nents of cuplock system scaf- folding	Participant will be able to, • Components of cuplock system scaffolding	CON/ N0101, PC1 to PC12, KA1 to KA6, KB1 to KB11			4
	Compo- nents of frame system scaf- folding	Participant will be able to, • Components of frame system scaffolding	CON/ N0101, PC1 to PC12, KA1 to KA6, KB1 to KB11			4
	Scaffolding tools	Participant will be able to, • Scaffolding tools	CON/ N0101, PC1 to PC12, KA1 to KA6, KB1 to KB11			4
	Use the scaffolding tools	Participant will be able to, • Use the scaffolding tools	CON/ N0101, PC1 to PC12, KA1 to KA6, KB1 to KB11			4
	Erect cup- lock system scaffold in correct way	Participant will be able to, • Erect cuplock system scaffold in correct way	CON/ N0101, PC1 to PC12, KA1 to KA6, KB1 to KB11			4
	Erect frame system scaffold in correct way	Participant will be able to, • Erect frame system scaffold in correct way	CON/ N0101, PC1 to PC12, KA1 to KA6, KB1 to KB11			4
	Dismantle the scaffold	Participant will be able to, • Dismantle the scaffold	CON/ N0101, PC1 to PC12, KA1 to KA6, KB1 to KB11			4
	Work safely while erecting and dismantling the scaffold	Participant will be able to, • Work safely while erecting and dismantling the scaffold	CON/ N0101, PC1 to PC12, KA1 to KA6, KB1 to KB11			4

6	Cement Mortar and Concrete Mix – Preparation & Curing	Select and use ingredients required to make cement mortar and concrete mix	Participant will be able to, <ul style="list-style-type: none"> Select and use ingredients required to make cement mortar and concrete mix 	CON/ N0103, PC1 to PC18, KA1 to KA5, KB1 to KB13	Interactive Lecture	PPT	4		
		Understand setting time of cement for preparation of mortar	Participant will be able to, <ul style="list-style-type: none"> Understand setting time of cement for preparation of mortar 	CON/ N0103, PC1 to PC18, KA1 to KA5, KB1 to KB13			Demonstration and practice	Required Tools & Equipments	4
		Prepare cement mortar as per given ratio	Participant will be able to, <ul style="list-style-type: none"> Prepare cement mortar as per given ratio 	CON/ N0103, PC1 to PC18, KA1 to KA5, KB1 to KB13					4
		Prepare concrete mix as per given ratio	Participant will be able to, <ul style="list-style-type: none"> Prepare concrete mix as per given ratio 	CON/ N0103, PC1 to PC18, KA1 to KA5, KB1 to KB13					4
		Work safely while working with cement and other chemicals	Participant will be able to, <ul style="list-style-type: none"> Work safely while working with cement and other chemicals 	CON/ N0103, PC1 to PC18, KA1 to KA5, KB1 to KB13					4
		Do's and Don'ts for preparation and use of mortar within specified time	Participant will be able to, <ul style="list-style-type: none"> Do's and Don'ts for preparation and use of mortar within specified time 	CON/ N0103, PC1 to PC18, KA1 to KA5, KB1 to KB13					4
		Understand the importance of curing process	Participant will be able to, <ul style="list-style-type: none"> Understand the importance of curing process 	CON/ N0103, PC1 to PC18, KA1 to KA5, KB1 to KB13					4

		Describe the different methods used for curing	Participant will be able to, <ul style="list-style-type: none"> Describe the different methods used for curing 	CON/ N0103, PC1 to PC18, KA1 to KA5, KB1 to KB13			4
		Carry out curing in correct and efficient way	Participant will be able to, <ul style="list-style-type: none"> Carry out curing in correct and efficient way 	CON/ N0103, PC1 to PC18, KA1 to KA5, KB1 to KB13			4
		Minimise the wastage of water	Participant will be able to, <ul style="list-style-type: none"> Minimise the wastage of water 	CON/ N0103, PC1 to PC18, KA1 to KA5, KB1 to KB13			4
7	Maintaining a Safe, Hygienic and Secure Working Environment (CON/ N9001)	Types of hazards at the construction sites and identify the hazards specific to the domain related works	Participant will be able to, <ul style="list-style-type: none"> Types of hazards at the construction sites and identify the hazards specific to the domain related works 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09	Interactive Lecture	PPT	2
		Recognize the safety control measures and actions to be taken under emergency situation	Participant will be able to, <ul style="list-style-type: none"> Recognize the safety control measures and actions to be taken under emergency situation 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09	Demonstration and practice	Required Tools & Equipments	2
		Reporting procedure to the concerned authority in case of emergency situations	Participant will be able to, <ul style="list-style-type: none"> Reporting procedure to the concerned authority in case of emergency situations 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2

	The classes of fire and types of fire extinguishers	Participant will be able to, <ul style="list-style-type: none"> The classes of fire and types of fire extinguishers 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2
	The operating procedure of the fire extinguishers	Participant will be able to, <ul style="list-style-type: none"> The operating procedure of the fire extinguishers 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2
	The importance of participation of workers in safety drills	Participant will be able to, <ul style="list-style-type: none"> The importance of participation of workers in safety drills 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2
	Basic medical tests required for working at construction site	Participant will be able to, <ul style="list-style-type: none"> Basic medical tests required for working at construction site 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2
	Purpose and importance of vertigo test at construction site	Participant will be able to, <ul style="list-style-type: none"> Purpose and importance of vertigo test at construction site 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2
	Types and benefits of basic ergonomic principles, which should be adopted while carrying out specific task at the construction sites	Participant will be able to, <ul style="list-style-type: none"> Types and benefits of basic ergonomic principles, which should be adopted while carrying out specific task at the construction sites 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2

	Use of PPEs as per work requirements	Participant will be able to, <ul style="list-style-type: none"> • Use of PPEs as per work requirements 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2
	Follow the practices to maintain personal hygiene, workplace hygiene and site/ workplace sanitization	Participant will be able to, <ul style="list-style-type: none"> • Follow the practices to maintain personal hygiene, workplace hygiene and site/ workplace sanitization 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2
	The importance of housekeeping works	Participant will be able to, <ul style="list-style-type: none"> • The importance of housekeeping works 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2
	Keep an eye on safe housekeeping practices	Participant will be able to, <ul style="list-style-type: none"> • Keep an eye on safe housekeeping practices 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2
	Different types of waste at construction sites and their disposal method	Participant will be able to, <ul style="list-style-type: none"> • Different types of waste at construction sites and their disposal method 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2
	Know safe waste disposal practices followed at construction site	Participant will be able to, <ul style="list-style-type: none"> • Know safe waste disposal practices followed at construction site 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2

	Different types of infectious disease that can spread/ originate at a construction site	Participant will be able to, <ul style="list-style-type: none"> Different types of infectious disease that can spread/ originate at a construction site 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2
	The ways of transmission of the various infectious disease	Participant will be able to, <ul style="list-style-type: none"> The ways of transmission of the various infectious disease 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2
	Methods to check the spread of the infectious disease	Participant will be able to, <ul style="list-style-type: none"> Methods to check the spread of the infectious disease 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2
	Symptoms and cure of the various infectious disease	Participant will be able to, <ul style="list-style-type: none"> Symptoms and cure of the various infectious disease 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2
	Procedure to report to the concerned authority regarding the outbreak/ hazard of any infectious disease/ pandemic	Participant will be able to, <ul style="list-style-type: none"> Procedure to report to the concerned authority regarding the outbreak/ hazard of any infectious disease/ pandemic 	CON/ N9001, PC1 to PC12, KA1 to KA3, KB1 to KB09			2

8	Employability Skills	Introduction to Employability Skills	<ul style="list-style-type: none"> • Discuss the Employability Skills required for jobs in various industries. • List different learning and employability related GOI and private portals and their usage. 	DGT/VSQ/N0101	Team Activity: Interactive discussion	Handbook	2
		Constitutional values - Citizenship	<ul style="list-style-type: none"> • Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen. • Show how to practice different environmentally sustainable practices. 	DGT/VSQ/N0101	Classroom lecture, discussion, demonstration, practical	Handbook	2
		Becoming a Professional in the 21st Century	<ul style="list-style-type: none"> • Discuss importance of relevant 21st century skills. • Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life. • Describe the benefits of continuous learning. 	DGT/VSQ/N0101			4

		Basic English Skills	<ul style="list-style-type: none"> • Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone. • Read and interpret text written in basic English. • Write a short note/ paragraph / letter/e-mail using basic English. 	DGT/VSQ/ N0101			5
		Communication Skills	<ul style="list-style-type: none"> • Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette. • Explain the importance of active listening for effective communication. • Discuss the significance of working collaboratively with others in a team. 	DGT/VSQ/ N0101			2
		Diversity & Inclusion	<ul style="list-style-type: none"> • Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD. • Discuss the significance of escalating sexual harassment issues as per POSH act. 	DGT/VSQ/ N0101			2
		Financial and Legal Literacy	<ul style="list-style-type: none"> • Outline the importance of selecting the right financial institution, product, and service. • Demonstrate how to carry out offline and online financial transactions, safely and securely. • List the common components of salary and compute income, expenditure, taxes, investments etc. • Discuss the legal rights, laws, and aids. 	DGT/VSQ/ N0101			7

		Essential Digital Skills	<ul style="list-style-type: none"> Describe the role of digital technology in today's life. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely. Create sample word documents, excel sheets and presentations using basic features utilize virtual collaboration tools to work effectively. 	DGT/VSQ/ N0101			10
		Entrepreneurship	<ul style="list-style-type: none"> Explain the types of entrepreneurship and enterprises. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement. Create a sample business plan, for the selected business opportunity. 	DGT/VSQ/ N0101			8

		Customer Service	<ul style="list-style-type: none"> Describe the significance of analysing different types and needs of customers. Explain the significance of identifying customer needs and responding to them in a professional manner. Discuss the significance of maintaining hygiene and dressing appropriately. 	DGT/VSQ/ N0101			4
		Getting Ready for apprenticeship & Jobs	<ul style="list-style-type: none"> Create a professional Curriculum Vitae (CV). Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively. Discuss the significance of maintaining hygiene and confidence during an interview. Perform a mock interview. List the steps for searching and registering for apprenticeship opportunities. 	DGT/VSQ/ N0101			4

Annexure - II







Assessment Guidelines and Assessment Weightage	
Job Role	Helper Mason
Qualification Pack	CON/Q0101
Sector Skill Council	Construction Skill Development Council of India






Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	The assessment for the knowledge part will be based on knowledge bank of questions created by Assessment
3	Individual assessment agencies will create unique question papers for knowledge/theory part for assessment of candidates as per assessment criteria given below
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on assessment criteria.
5	The passing percentage for each QP will be 50%. To pass the Qualification Pack, every trainee should score a minimum of 50% individually in each NOS.
6	The Assessor shall check the final outcome of the practices while evaluating the steps performed to achieve the final outcome
7	The trainee shall be provided with a chance to repeat the test to correct his procedures in case of improper performance, with a deduction of marks for each iteration.
8	After the certain number of iteration as decided by SSC the trainee is marked as fail, scoring zero marks for the procedure for the practical activity.
9	In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack within the specified timeframe set by SSC.
10	Minimum duration of Assessment of each QP shall be of 4hrs/trainee.





National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
Erect and dismantle temporary scaffold up to 3.6 meter (CON/N0101)	20	80	0	0	100	15
Identify, handle, shift and store materials, tools & equipment relevant to masonry work (CON/N0102)	20	80	-	-	100	30
Prepare cement mortar /concrete mix and carry out curing of masonry structure (CON/N0103)	20	80	-	-	100	40
Work according to personal health, safety and environment protocol at construction site (CON/N9001)	20	80	0	0	100	10
Employability Skills (DGT/VSQ/N0102)	30	30	0	0	50	5
Total	100	350	0	0	450	100
Carry out manual earthwork at construction site (CON/N0104)	20	80	0	0	100	5
Total	20	80	0	0	100	5

Annexure-III

Annexure of QR Codes for Helper Mason

Chapter Name	Unit Name	Topic Name	URL	QR Code
Chapter 1: Introduction of Construction Sector and Job Role	Unit 1.2 – Introduction to Construction Industry in India	Overview of Construction Sector in India	https://youtu.be/yhjDhav4P-fw	 Overview of Construction Sector in India
	Unit 1.3 – Brief about Masonry Occupation	Job Description of a Helper Mason	https://youtu.be/KfUEF5drpMM	 Job Description of a Helper Mason
Chapter 2: Core/Generic Skills	Unit 2.1 – Numeracy Skills	Different System of Measurement	https://youtu.be/H1xo5UVJKVo	 Different System of Measurement
	Unit 2.2 Systems of Measure- ments	Area, volume and perimeter of geometrical shapes	https://youtu.be/OhTubw4C0to	 Area, volume and perimeter of geometrical shapes
Chapter 3: Tools, Materials and Consumables (CON/N0102)	Unit 3.1 – Masonry Hand Tools and Equipment	Masonry Tools and Equipment	https://youtu.be/wuzQ8dsYJSw	 Masonry Tools and Equipment
	Unit 3.2 – Construction Materials	What is Construction Material	https://youtu.be/XsFeVu-VQE-E	 What is Construction Material

	Unit 3.3 – Handling and Storage of Material	Handling Masonry Materials	https://youtu.be/Ks2qnadxLqA	 Handling Masonry Materials
Chapter 4: Carrying Out Earthwork Manually (CON/N0104)	Unit 4.1 – Preparatory Work and Soil Cutting	Introduction to Earthwork	https://youtu.be/OyVyFD5RAFc	 Introduction to Earthwork
	Unit 4.2 – Backfilling and Compaction Manually	Steps for Carrying out Backfilling and Compaction	https://youtu.be/BxSLst_fVP4	 Design and Tolerance in Shuttering
Chapter 5: Erect and Dismantle Temporary Scaffolding (CON/N0101)	Unit 5.1 – Basic Concept of Temporary Scaffolding	Types of Scaffolding	https://youtu.be/YuBFUtG-Gcbk	 Types of Scaffolding
	Unit 5.2 – Concept of Conventional Scaffolding	Material used in Conventional Bamboo	https://youtu.be/8DP_7OK-6dCw	 Material used in Conventional Bamboo

	Unit 5.3 – Concept of Modular Scaffolding System	Modular Scaffolding System	https://youtu.be/oRxc2LL-fxO4	 Modular Scaffolding System
	Unit 5.4 – Erecting and Disman- tling of Temporary Scaffolding	Erecting a Frame-System Scaffold	https://youtu.be/VQ1e0VZmTmM	 Erecting a Frame-System Scaffold
Chapter 6: Cement Mortar and Concrete Mix – Preparation & Curing (CON/N0103)	Unit 6.1 – Preparing Cement Mortar and Concrete Mix	Cement Mortar and Concrete	https://youtu.be/j9MxR-fr2m0	 Cement Mortar and Concrete
	Unit 6.2 – Introduction to Masonry Curing	Methods of Curing	https://youtu.be/OqJsNCL-PAJo	 Methods of Curing





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