

Participant Handbook

Helper Mason



Qualifications Pack- Helper Mason

- ◆ SECTOR - CONSTRUCTION
- ◆ SUB-SECTOR - Building & Factories, Heavy Infrastructure (Rail, Road & Runways), Power Generation (Dam and Transmission & Distribution etc.)
- ◆ OCCUPATION - Masonry
- ◆ REFERENCE ID - CON/Q OIOI

Table of Contents

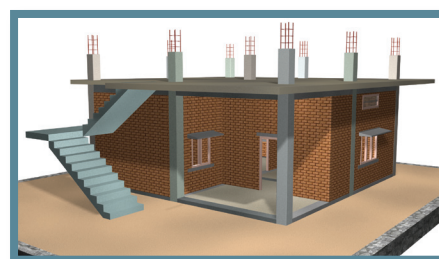
Welcome Note..... 1

General Instructions 3

Symbols Used in This Manual 4

Course 1 – Introduction to Masonry 5

Introduction to Masonry..... 7



Course 2 – Building Types and Components..... 13

Building Types and Components 15

Course 3 – Building Materials 21

Introduction to Building Materials 23

Material Handling and Stacking 33

Housekeeping and Waste Disposal 39



Course 4 – Tools and Equipments..... 45

Tools and Their Uses 47

Washing of Tool 55

Equipments and Their Uses..... 59

Course 5 – Measurements and Conversion 67

Introduction to Measurements 69

Various Modes of Measurement 73

Conversion of Measurements 79

Course 6 – Safety 85

Safety at Work 87

PPE 93

Dos and Don'ts 99

Course 7– Preparation of Mortar 105

Quality Requirement of Cement, Sand, Water 107

Mortar and Its Types 113

Procedure for Mortar Preparation..... 119

Course 8 – Brick Works125

- Introduction to Brick Wall127
- Quality Testing of Bricks131
- Types of Brick Masonry.....137
- Common Preparatory Tasks143
- Construction of Half-Brick Wall149
- Construction of Full Brick Wall157
- Construction of One and Half Brick Wall165
- Construction of Two Brick Wall173
- Introduction to Bonds.....181
- Types of Bonds185
- Construction of English Bond191
- Construction of Flemish Bond197
- Wall Junctions - Types and Construction203
- Joints in Bricks211
- Construction of Brick Column.....215
- Dos and Don'ts of Brick Masonry221



Course 9 – Scaffolding and Staging.....227

- Introduction and Methods229
- Procedure for Erecting Scaffolding233
- Procedure for Dismantling Scaffolding239
- Scaffolding and Staging Dos and Don'ts243

Course 10 – Stone Masonry249

- Introduction and Types251
- Dressing of Stones257
- Construction of Stone Wall261
- Dos and Don'ts in Stone Masonry265

Course 11 – Cement Block Masonry.....269

- Cement Block Masonry - Introduction and Types271
- Construction of Block Wall up to 3 Feet279
- Dos and Don'ts in Block Masonry287

Course 12 – Concrete.....291
 Introduction and Types293
 Materials Required299
 Mixing of Concrete.....305
 Transportation and Placing of Concrete.....311
 Concrete Pouring Compaction and Levelling319
 Curing of Concrete325
 RCC Beam and Column Construction.....329



Course 13 – Flooring.....337
 Compaction of Earth.....339
 Foundation343
 Brick Flooring349
 Concrete Flooring353
 Floor Finishing357

Course 14 – Surface Finishing.....363
 Surface Finishing, Purpose and Tools.....365
 Ground Work for Plastering371
 Surface Preparation for Plastering.....377
 Plastering in Two Coats and Three Coats383
 Defects in Plastering391
 Surface Finishing Pointing397



Course 15 – Doors and Windows.....401
 Fixing of Door Frames403
 Fixing Window Frames.....409
 Casting Lintel415
 Casting Ring Beam421

Course 16 – Related Activities.....427
 Introduction to Bar Bending and Steel Fixing429
 Introduction to Shuttering Carpentry435
 Enabling Works and Planning.....439

Soft Skills.....443
Answers451
Session Plan477
Participant’s Feedback Form


Welcome Note

Dear Participant,

Welcome to this training programme titled “Helper Mason”. As the title itself suggests, the focus of this programme is none other than you yourself. Did you know that the construction industry in India is the second largest employment provider after agriculture? With a boom in the construction industry, there is a dire need for skilled Masons and Helper Masons. If you skill yourself, then there are jobs galore in this industry waiting to be grabbed.

As a Helper Mason your primary tasks will be on brickworks, RCC work, plastering to name a few. Our entire training programme focuses and emphasises on these critical modules. This book details out the step by step procedure for all construction related tasks that you must learn. It is replete with photographs to help you understand. Every module begins by listing the objectives so as to help you understand what you will learn and achieve. At the end, you have the opportunity to summarise your learnings and finally take up a small quiz in the form of a worksheet to check your understanding. It is recommended that at the end of each day, you go through the modules that were covered during the day as a revision. Right at the end, are included some soft skills modules. Soft skills are as important as hard skills. You may be excellent in your job, but if you do not possess soft skills then it is likely that the industry may not prefer you. Along with soft skills, health hygiene and safety too are equally important. Remember a Helper Mason’s job can cause physical strain due to prolonged work hours in the Sun. So what you eat, the importance of some stretching exercises to keep fit and good sleep are as vital. Your Trainer will give you insights into these too.

So, on that short note, we welcome you yet again to this training programme. We hope you will benefit and skill yourself. Best of luck!

Course 8	<h1>Introduction to Brick Wall</h1>
Module 1	
	<p>At the end of this module you will be able to:</p> <ul style="list-style-type: none"> ◆ Define brick masonry. ◆ State the types of bricks. ◆ Explain the meaning of the terms related to brick masonry.

Session Plan	
1	Module Overview
2	Brick Masonry
3	Types of Bricks
4	Terms Related to Brick Masonry
5	Key Learnings
6	Worksheet



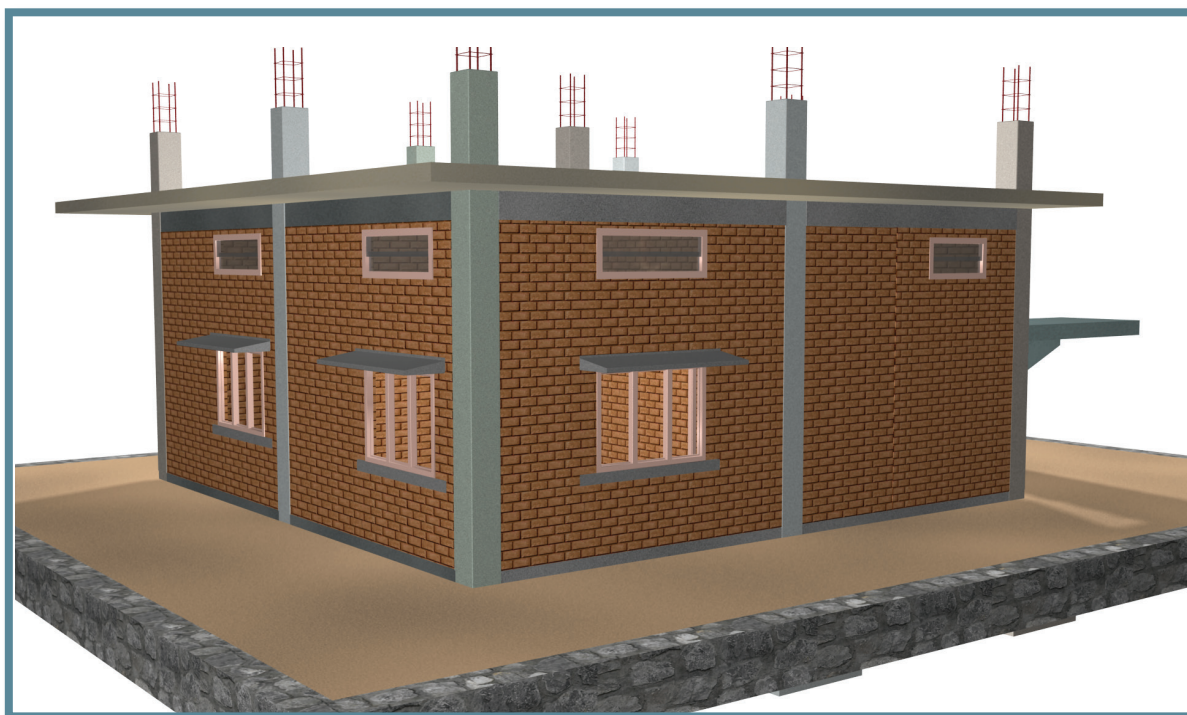
Module Overview

Bricks are the main building blocks of almost all the structures. In this module, you will learn about the types of bricks and terms related to brick masonry.



Brick Masonry

Brick masonry refers to the systematic arrangement of bricks and bonding them together with mortar.



Types of Bricks

Bricks are obtained by moulding clay in rectangular blocks of uniform size and then by drying and burning these blocks.

There are three major types of bricks, such as:

- ◆ Clay bricks
- ◆ Fly ash bricks
- ◆ Cement bricks

The major component in clay bricks is clay. These bricks are the most common ones.

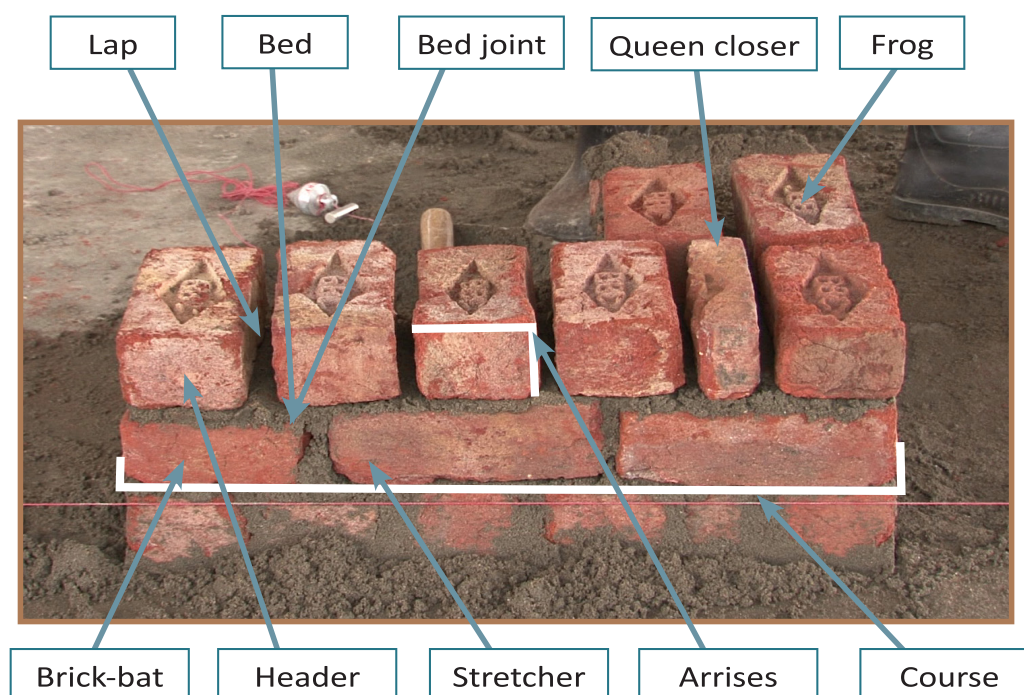
- ◆ Fly ash bricks are made up of waste material obtained by burning coal or lignite in power plants.
- ◆ Cement bricks are made up of cement fine aggregates and sometimes coarse aggregates.



Terms Related to Brick Masonry

Here are the common terms related to brick masonry:

- ◆ **Lap** is the horizontal distance between two successive courses.
- ◆ **Bed** is a layer of mortar.
- ◆ **Bed joint** is a horizontal layer of mortar upon which the bricks are laid.
- ◆ **Queen closer** is a piece of brick used to close up the bond at the end of the brick course.
- ◆ **A frog** is a depression created on the surface of a brick.
- ◆ **Brick-bat** is a piece of brick used in completing a course.
- ◆ **Header** refers to laying of bricks with their breadth or width parallel to the face or direction of the wall.
- ◆ **Stretcher** refers to laying of bricks with their length parallel to the face or direction of the wall.
- ◆ **Arrises** are edges formed by the intersection of plane surface of bricks.
- ◆ **Course** is a row of bricks either in header or stretcher position.





Key Learnings

Summarize your learning here. Write your answers in the spaces provided.

1. Define the terms stretcher, header, course, bed, frog and brick-bat.

2. Identify the images. Write the terms to describe them.




Worksheet

1. Match the columns.

Term	
a.	Bed
b.	Brick-bat
c.	Frog
d.	Arrises

Description	
i.	A dug on the brick
ii.	A layer of mortar
iii.	Used in completing a course
iv.	Edges formed

Course 8	<h1>Quality Testing of Bricks</h1>
Module 2	
	<p>At the end of this module you will be able to:</p> <ul style="list-style-type: none"> ◆ Differentiate a good quality brick from a poor quality brick.

Session Plan	
1	Module Overview
2	Hardness Test
3	Water Absorption Test
4	Dropping Brick to Ground Test
5	Clapping Two Bricks Test
6	What Brick to Buy?
7	Key Learnings
8	Worksheet



Module Overview

Bricks play a major role in construction. Hence, it is necessary that you select bricks of good quality. In this module, you will learn the methods to identify good quality from the poor quality bricks.



Hardness Test

To test the hardness of a brick:

- ◆ Scratch the brick with your fingernail.
- ◆ Check if any impression of the nail appears on the brick.
- ◆ If you find an impression it is not a good quality brick as no impression will be made on a good brick.



Brick with impression - Poor quality



Brick without impression - Good quality



Water Absorption Test

To determine the percentage of water absorption of bricks:

- ◆ Choose a brick. Measure the weight of the brick. . Weight of brick M_1 is equal to, say 4 kilograms and weight of brick M_2 is, say 3 kilograms.
- ◆ Immerse the bricks in water for 24 hours.
- ◆ Remove the bricks from water.
- ◆ Measure the weight of the brick after immersing in water for 24 hrs. Weight of brick M_2 in first scenario is 5 and weight of brick M_2 in 2nd scenario is three point one five kilograms.
- ◆ You can check the percentage of water absorbed by brick using the formula: $\frac{M_2 - M_1}{M_1} \times 100$
- ◆ A poor quality brick absorbs water much beyond 20% its own weight
- ◆ A good brick should NOT absorb water more than 20% of its weight.



Brick absorbs < 5% of its weight - Good quality



Strength Test

To test the strength of a brick:

- ◆ Holding a brick 3 to 4 feet high.
- ◆ Drop it to the ground.
- ◆ Poor quality brick breaks.
- ◆ A good brick does not break.



Brick breaks when dropped - Poor quality



Toughness Test

To test the toughness of the brick:

- ◆ Hold two bricks each one in a hand and strike them together.
- ◆ Poor quality brick does not produce ringing sound.
- ◆ Good quality brick produces a ringing sound upon striking.



What Brick to Buy?

Along with testing the quality of the bricks, check that the bricks chosen are of defined size:

- ◆ A brick should be of 25 cm length, 12.5 cm height and 7.5 cm width.
- ◆ Volume of a standard brick is 2343 cubic centimetres and volume of brick with mortar is 2500 cubic centimetres.
- ◆ Avoid over burnt bricks. An over burnt brick is one that has black patches.



Over burnt brick



Standard brick



Key Learnings

Summarize your learning here. Write your answers in the spaces provided.

1. What are the various tests you will perform to differentiate good quality bricks from poor quality?



Worksheet

1. Read the question. Tick on the correct answer.

A poor quality brick absorbs water more than _____ % of its own weight.

- a. 20
- b. 6
- c. 4
- d. 3

2. Read the question. Tick on the correct answer.

A good _____ does not break.

- a. Brick
- b. Sand
- c. Cement
- d. Clay

3. Read the question. Tick on the correct answer.

A brick should be of 25 cm _____, and 12.5 cm height.

- a. Length
- b. Height
- c. Width
- d. Breadth

4. Read the question. Tick on the correct answer.

_____ of a standard brick is 2343 cubic centimetres.

- a. Volume
- b. Breadth
- c. Height
- d. Depth

5. Read the question. Tick on the correct answer.

An over burnt brick has _____ patches.

- a. Orange
- b. Black
- c. Red
- d. White

6. Read the question. Tick on the correct answer.

Volume of brick with _____ is 2500 cubic centimetres.

- a. Cement
- b. Mortar
- c. Sand
- d. Clay

7. Read the question. Tick on the correct answer.

A good quality brick doesn't break when dropped from _____ feet high.

- a. 3 to 4
- b. 4 to 6
- c. 4 to 3
- d. 3 to 5

8. Read the question. Tick on the correct answer.

The formula used to check the percentage of water absorbed by brick is _____.

- a. $\frac{M_2 - M_1}{M_1} \times 100$
- b. $\frac{M_2 - M_1}{M_2} \times 100$
- c. $\frac{M_2 + M_1}{M_1} \times 100$
- d. $\frac{M_2 + M_1}{M_2} \times 100$

9. Read the question. Tick on the correct answer.

Bricks should be immersed in water for _____.

- a. 24 hours
- b. 2 hours
- c. 12 hours
- d. 22 hours

10. Read the question. Tick on the correct answer.

Good quality bricks can be identified by performing the _____ to test hardness of the brick.

- a. Hardness test
- b. Roughness test
- c. Smoothness test
- d. Quality test

11. Identify good quality brick from poor quality brick. Tick on the good quality brick.



Notes

Session Plan

Program Name	Assistant Mason		
Name of Client	NSDC		
Version No.	1.0	Version Update Date	18/05/2012
Pre-requisites to Training	Minimum qualification – 10th / 12th pass		
Training Outcomes	<p>After completing this program, participants will be able to:</p> <ul style="list-style-type: none"> ◆ Prepare mortar ◆ Construct a half brick wall with different bonds ◆ Construct a full brick wall with different bonds ◆ Construct a one and a half brick wall with different bonds ◆ Construct a two brick wall with different bonds ◆ Construct a brick column ◆ Erect and dismantle scaffolding ◆ Construct a cement block wall upto 3 feet ◆ Construct RCC beam and column ◆ Do surface finishing ◆ Fix door and window frames 		

Sr. No.	Module	Session	Objectives	Methodology	Tools	Time
Day 1						
1	Morning Energizer	Morning starter song/Good sayings/Stretching Exercises/Prayer/Moral stories	To energize the participants to take on the day	<ul style="list-style-type: none"> Group participation 	<ul style="list-style-type: none"> Songs provided in Trainer's guide 	10 mins.
2	Icebreaker	Icebreaker	To introduce each other and build rapport with fellow participants and Trainer	<ul style="list-style-type: none"> Activity 	<ul style="list-style-type: none"> Interactive Game from Trainer Guide 	1 hr. 40 mins
3	Introduction to Masonry	Introduction	<ol style="list-style-type: none"> Explain about the trade of masonry State the roles and responsibilities of an Assistant Mason 	<ul style="list-style-type: none"> Multimedia based learning Trainer led discussion Memorization and transfer of knowledge 	<ul style="list-style-type: none"> Multimedia (K – Yan) Participant handbook 	1 hr 15 mins
4	Building: Types and Components	Types and Components	<ol style="list-style-type: none"> State the sequence of construction activities starting from foundation to finishing Explain the function of each component 	<ul style="list-style-type: none"> Multimedia based learning Trainer led discussion Memorization and transfer of knowledge 	<ul style="list-style-type: none"> Multimedia (K – Yan) Participant handbook 	2 hrs 20 mins
5	Building: Types and Components	Practical: Identifying Building Components	Identify different building components	<ul style="list-style-type: none"> Real life observation 	<ul style="list-style-type: none"> Site visit of building under construction as well as those fully constructed 	1 hr 20 mins

Sr. No.	Module	Session	Objectives	Methodology	Tools	Time
Day 2						
1	Morning Energizer	Morning starter song/Good sayings/Stretching Exercises/Prayer/Moral stories	To energize the participants to take on the day	<ul style="list-style-type: none"> ◆ Group participation 	<ul style="list-style-type: none"> ◆ Songs provided in Trainer's guide 	10 mins.
2	Building: Types and Components	Recap	To revise all that was learnt on the previous day	<ul style="list-style-type: none"> ◆ Trainer led discussion ◆ Question based discussion 	<ul style="list-style-type: none"> ◆ Asking question ◆ Multimedia ◆ Participant's handbook 	10 mins
3	Building Materials	Introduction to Building Materials	<ol style="list-style-type: none"> 1. Identify the different building materials 2. State the uses of each 	<ul style="list-style-type: none"> ◆ Multimedia based learning ◆ Trainer led discussion ◆ Memorization and transfer of knowledge 	<ul style="list-style-type: none"> ◆ Multimedia (K – Yan) ◆ Participant handbook ◆ Poster 	1 hr 40 mins
4	Building Materials	Practical: Building Materials	Identify the different building materials	<ul style="list-style-type: none"> ◆ Guide practice (Work with me) 	<ul style="list-style-type: none"> ◆ Samples of various building material 	1 hr 15 mins
5	Building Materials	Material Handling and Stacking	Demonstrate the correct procedure in transporting, handling and stacking of the various materials	<ul style="list-style-type: none"> ◆ Multimedia based learning ◆ Trainer led discussion ◆ Memorization and transfer of knowledge 	<ul style="list-style-type: none"> ◆ Multimedia (K – Yan) ◆ Participant handbook 	40 mins
6	Building Materials	Practical Material Handling	Practice the correct procedure in transporting, handling and stacking of the various materials	<ul style="list-style-type: none"> ◆ Hands on practice (Try me) ◆ Guided practice (Work with me) 	<ul style="list-style-type: none"> ◆ Stacks of different building materials ◆ Participant handbook 	40 mins

Sr. No.	Module	Session	Objectives	Methodology	Tools	Time
Day 26						
1	Morning Energizer	Morning starter song/Good sayings/Stretching Exercises/Prayer/Moral stories	To energize the participants to take on the day	<ul style="list-style-type: none"> ◆ Group participation 	<ul style="list-style-type: none"> ◆ Songs provided in Trainer's guide 	10 mins
2	Doors and Windows/ Related Activities	Recap	To revise all that was learnt on the previous day	<ul style="list-style-type: none"> ◆ Facilitator led discussion ◆ Question based discussion (Expository methods) ◆ Remediation 	<ul style="list-style-type: none"> ◆ Multimedia ◆ Participant's handbook 	10 mins
3	Foundation	Assessment - Foundation	To evaluate the students on their learning of the topic	<ul style="list-style-type: none"> ◆ Practical assessment (Summative evaluation) 	<ul style="list-style-type: none"> ◆ Assessment guide 	2 hr 55 mins
4	Brick work	Assessment - Brick Flooring & Cement Flooring	To evaluate the students on their learning of the topic	<ul style="list-style-type: none"> ◆ Practical assessment (Summative evaluation) 	<ul style="list-style-type: none"> ◆ Assessment guide 	2 hr 20 mins
5	Surface finishing	Assessment - Double Plaster	To evaluate the students on their learning of the topic	<ul style="list-style-type: none"> ◆ Practical assessment (Summative evaluation) 	<ul style="list-style-type: none"> ◆ Assessment guide 	1 hr 20 mins



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