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Facilitator Guide



Assistant Shuttering Carpenter

Sector
Construction

Sub-Sector
Real Estate and Infrastructure Construction

Occupation
Shuttering Carpentry

Reference ID: CON/Q0302, Version 3.0
NSQF Level 3

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Disclaimer

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

Shri Narendra Modi
Prime Minister of India

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 successful roll out the skill development initiatives, helping greatly our stakeholders particularly trainees, trainers and assessors etc. We are thankful to our Subject Matter Experts for the content and 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 the future.

About this book

The objective of the guide is to provide an approach map for interacting with the trainees undergoing training on this job role. The aim of the course is to provide both theoretical and practical knowledge to the trainees, and also to guide them regarding the procedure of assisting in shuttering carpentry works. The guide is neither a substitute nor 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 for covering a topic and includes some additional information that may be necessary for the trainer to develop better comprehension on the following aspects:

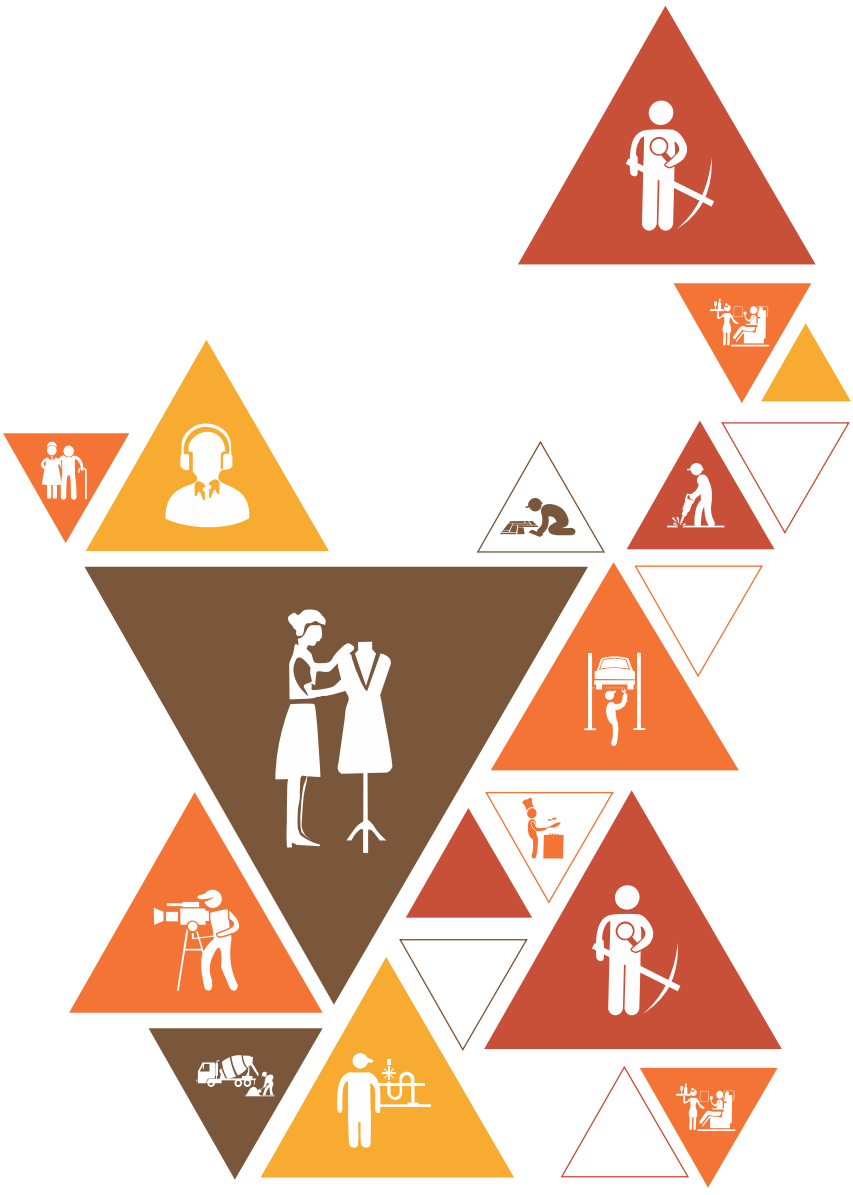
- **Knowledge and Understanding:** Satisfactory operational learning and comprehension to play out the required chore.
- **Performance Criteria:** Pick up the required aptitudes through hands-on preparation and play out the required operations inside the predetermined measures.
- **Professional Skills:** 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 by hands-on training. But it has to be ensured that these are in accordance with the knowledge imparted and time spent on each unit. It is expected that irrespective of the region, knowledge on all aspects will be imparted to trainees

Symbols Used

Table of Contents

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



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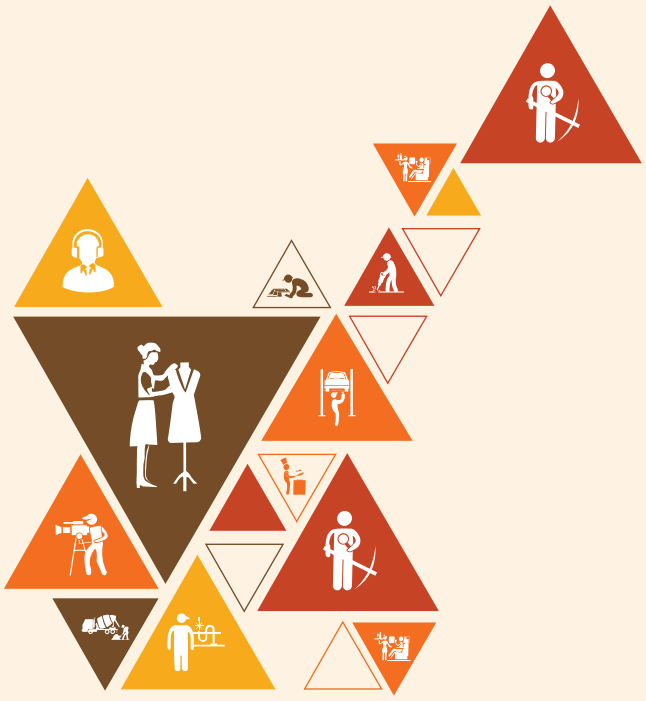
1. Introduction to Shuttering Carpentry Occupation

Unit 1.1 – Introduction to Construction Industry
Unit 1.2 – Role and Responsibilities of an Assistant Shuttering Carpenter



Bridge Module

Key Learning Outcomes

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

1. Describe the role and responsibilities of an Assistant Shuttering Carpenter.
2. Explain the expected personal attributes for the job role
3. Recall the basic terms used in the occupation of shuttering carpentry
4. Discuss the future possible progression and career options for assistant shuttering carpenter

Unit 1.1 Introduction to Construction Industry

Unit Objectives

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

1. Give an overview of construction industry.
2. Recall the basic terms used in the occupation of shuttering carpentry

Resources to be used

- Available objects such as training kit - trainer guide, presentations, whiteboard, marker, projector, laptop, video films, etc.
- PowerPoint slides, pictures/posters and videos depicting various information about the construction industry, types of construction, basic categories of construction projects, and market segments of the construction industry.

Say

- In this session, we shall learn key facts about the construction industry, types of construction, basic categories of construction projects, and market segments of the construction industry.
- Let's begin with an ice-breaking session, introduce yourself and ask participants to introduce themselves.

Activity

- **Purpose:** This activity aims to familiarise the participants in the group with one another.
- **Tentative Duration:** 15 Mins
- **Procedure:**
  1. Ask the participants to pronounce their name with an adjective beginning with the initial letter of their name.
  2. 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.

Say

I hope everyone enjoyed our first activity and now let's move on to the topics that will be covered in this session.

Ask

- What do you know about the construction industry?
- Do you know how many types of construction are there?

Elaborate

With the help of audio-visual aids and the participant handbook, elaborate:

- Construction Industry
- Construction Industry in India
- Types of Construction
- Construction Project Categories
- Market Segments of the Construction Industry
- Occupation of Shuttering Carpentry

Demonstrate

Show a PowerPoint presentation to the class on Construction Industry in India - https://www.slideserve.com/frieda/construction-sector-in-india-powerpoint-ppt-presentation and ask participants to note down the important points.

Say

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

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:**

1. 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.

2. 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.
3. 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.
4. 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.
5. 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:

1. Understand the concept of market segmentation in the construction industry.
2. Identify the various market segments within the construction field, including residential, commercial, industrial, infrastructure, and specialized sectors.
3. Analyse the characteristics, opportunities, and challenges associated with each market segment.
4. Gain insights into potential career paths and specialization options within the construction industry.
5. Reflect on their interests and skills to make informed decisions about their vocational course and future career goals in construction.

Say

Did you think the activity improved your understanding? I'm hoping now you have a better idea of the various market segment of the construction industry.

Summarize

- Note down the important points related to the construction industry, types of construction, and various market segments.
- Revise these points with the participants.

Notes for Facilitation

- Arrange the relevant handouts and leaflets for a better understanding of the topics
- Arrange audio-visual aids for a better understanding of the topics.
- Ask the participants if they have any questions.
- Encourage every participant to answer those questions and encourage peer learning in the class.

Notes

Unit 1.2 Role and Responsibilities of an Assistant Shuttering Carpenter

Unit Objectives

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

1. Describe the role and responsibilities of the assistant shuttering carpenter
2. Explain the expected personal attributes for the job role
3. Discuss the future possible progression and career options for an assistant shuttering carpenter

Resources to be used

- Available objects such as whiteboard, duster, marker, notepad, pens, participant handbooks, computer, projector, flipcharts etc.
- PowerPoint slides, pictures/ posters depicting various information about the roles and responsibilities of an Assistant Shuttering Carpenter.

Say

- In the previous session, we discussed India's construction sector, types of construction and segments of construction industry. In this session, we shall learn about the roles and responsibilities of an Assistant Shuttering Carpenter.

Ask

- Does anyone know what an Assistant Shuttering Carpenter do?

Notes for Facilitation

- Initiate the session with the participants by discussing the objectives of the module.
- Make the session interactive by asking the participants to share their expectations from the module on the blackboard/whiteboard.
- Introduce the topics to be covered and give some information about them.
- Give the participants a general idea about what will be covered in the module.

Demonstrate

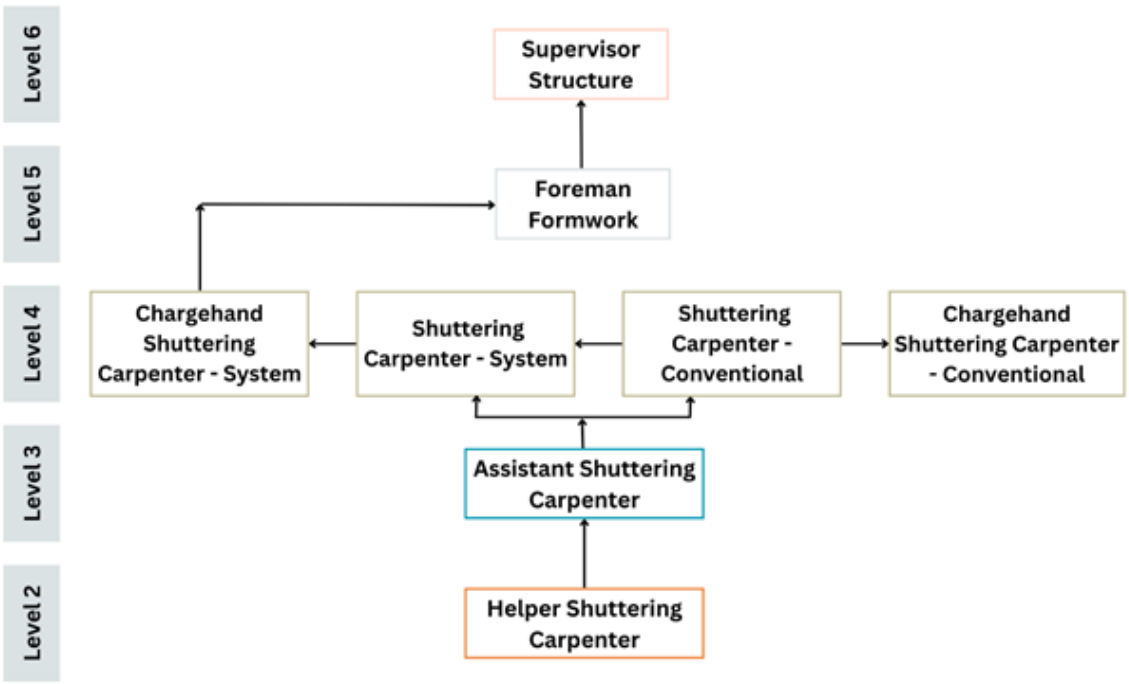


Fig. 1.2.1 Career Progression of an Assistant Shuttering Carpenter

Present the above image to the participants using a projector and explain the career path of an Assistant Shuttering Carpenter and ask the participants the following questions:

- Test that everyone knows about the skills and key competencies required to become an Assistant Shuttering Carpenter.
- Write down the participants' answers on whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Activity

- In this activity, you invite an experienced Assistant Shuttering Carpenter to give an overview of the roles, responsibilities, skill sets, and personal attributes required for the job role.
- You will conduct a group discussion session.
- If the students have any queries or they have any confusion regarding this chapter, they will raise their hands
- On availing permission, the students can ask questions.
- In addition to this, the expert will also share important pointers on areas like:
  1. Routine activities of an Assistant Shuttering Carpenter.
  2. Companies offering jobs for this role.

- After the doubts are cleared, the expert or you may add a few points in relation to meeting the requirements.
- In addition to those, you can also include a few extra points that you may find reliable to the topic and beneficial for the students

Say

Did you find this activity interesting? Can you see how much information you had previously and how much information you have now? Let us summarise the points discussed.

Do

- Jot down the crucial points on the whiteboard as the students speak.
- Share your input and insight to encourage the students and add to what they talk about.
- Ensure that all students participate in the class.

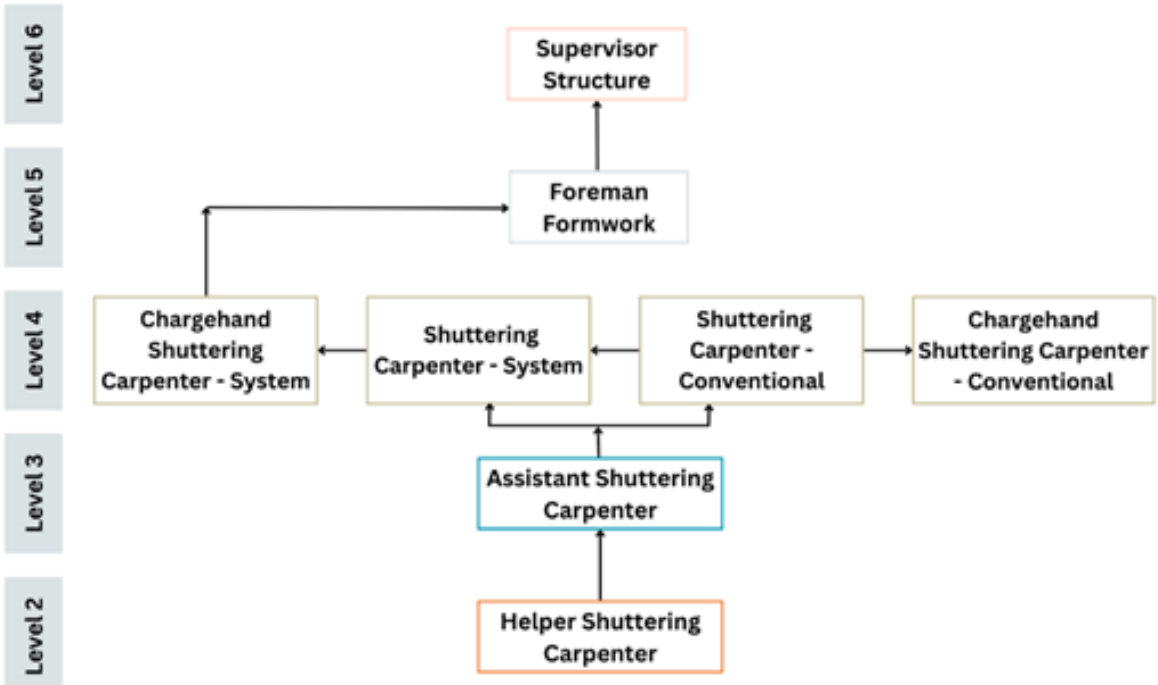
Ask

- What are the primary responsibilities of an Assistant Shuttering Carpenter?

Exercise

Key Solutions to PHB Exercises

1.



2.

An Assistant Shuttering Carpenter is responsible for:

i. Helping to assemble and install formwork.

ii. Aligning formwork components in order to ensure a perfect joint fit.

iii. Loading formwork components onto vehicle for delivery to work site.

iv. Carrying out any additional duties which may be required to ensure the successful completion of projects.

v. Ensuring that all formwork components are safely secured before transportation.

vi. Cooperating with other trades on site to ensure smooth project completion.

vii. Complying with all safety regulations and best practices.

viii. Disassembling formwork components when the project is completed.

ix. Reporting any issues or potential safety risks to the supervisor.

3.

An Assistant Shuttering Carpenter should:

- be physically fit, mentally alert, and safety-minded
- work in different places with different weather and site conditions
- work well as part of a team
- know how to handle different tools, materials and components in shuttering carpentry
- work under instructions and close supervision

4.

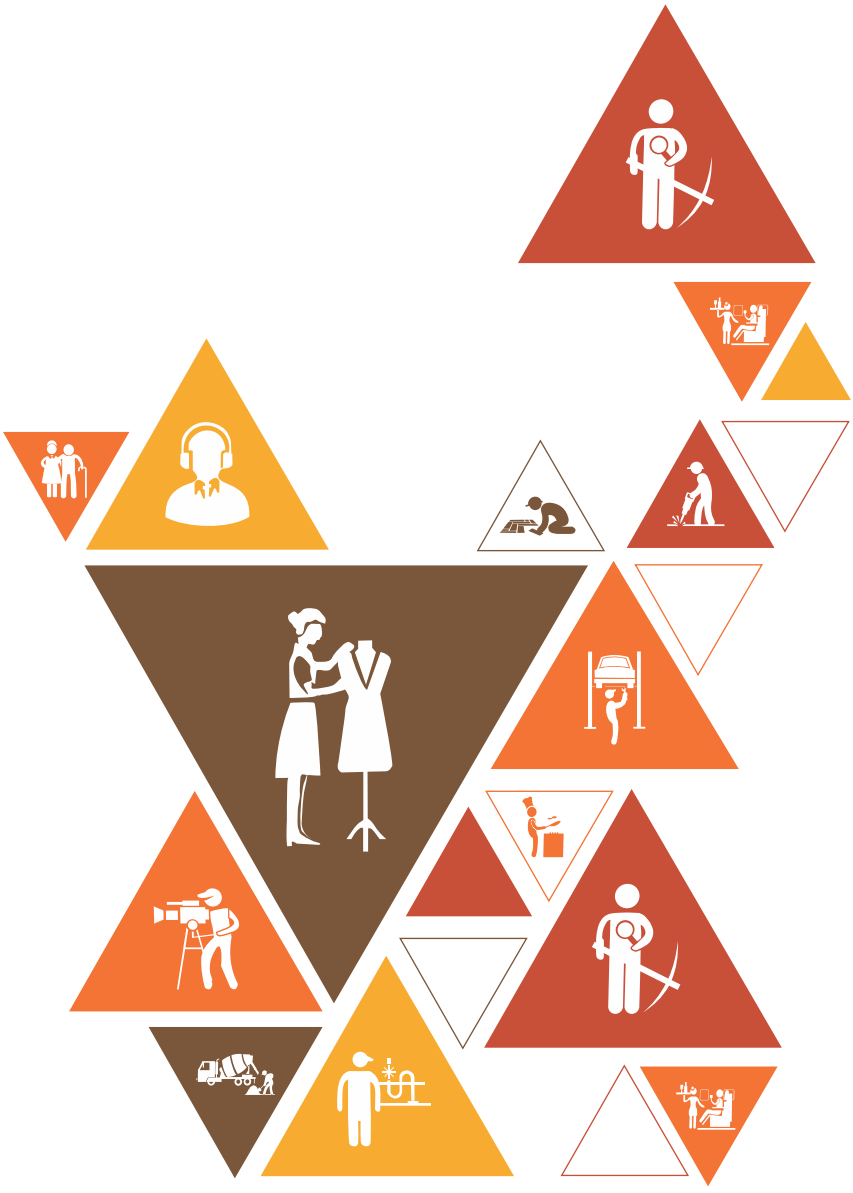
Types of Construction:

i. Building construction

ii. Industrial Construction

iii. Infrastructure Construction

Notes



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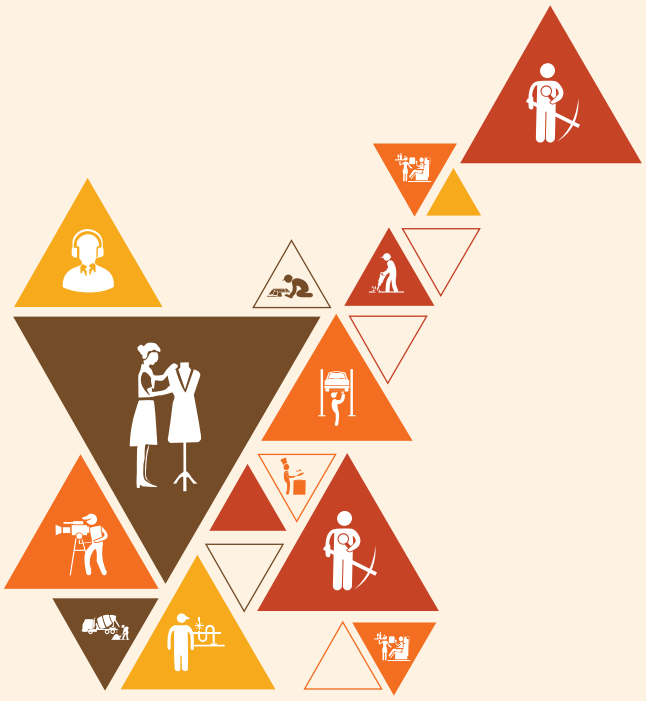
2. Operate Tools and Equipment

Unit 2.1 Use and maintain tools, components and equipment



(CON/N0312)

Key Learning Outcomes

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

1. List the different types of hand and power tools used in shuttering works along with their storing and stacking technique
2. Describe the process adopted for care and maintenance of hand and power tools used in shuttering carpentry works
3. Demonstrate operation of hand tools for cutting, planing and drilling of timber/ plywood.
4. Demonstrate operation of power tools for cutting, planing and drilling of timber/ plywood.
5. List the different types of woods used in shuttering carpentry works
6. Explain the common defects in wood
7. Identify common defects in wood visually
8. List the different types of plywood and their thickness
9. Describe the various type of slings, shackles and lifting belts
10. Demonstrate by using slings, shackles and lifting belt for lifting operation of shuttering components.
11. Explain the standard procedure adopted for shifting and stacking of various shuttering carpentry and scaffolding materials
12. Describe ways to optimize use of consumables
13. Recognize importance of housekeeping and various procedures involved in it

Unit 2.1 Use and maintain tools, components, and equipment

Unit Objectives

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

1. List the different types of hand and power tools used in shuttering works along with their storing and stacking technique
2. Describe the process adopted for care and maintenance of hand and power tools used in shuttering carpentry works
3. Demonstrate operation of hand tools for cutting, planing and drilling of timber/ plywood.
4. Demonstrate operation of power tools for cutting, planing and drilling of timber/ plywood.
5. List the different types of woods used in shuttering carpentry works
6. Explain the common defects in wood
7. Identify common defects in wood visually
8. List the different types of plywood and their thickness
9. Describe the various type of slings, shackles and lifting belts
10. Demonstrate by using slings, shackles and lifting belt for lifting operation of shuttering components.
11. Explain the standard procedure adopted for shifting and stacking of various shuttering carpentry and scaffolding materials
12. Describe ways to optimize use of consumables
13. Recognize importance of housekeeping and various procedures involved in it

Resources to be used

- Available objects such as whiteboard, duster, marker, notepad, pens, participant handbooks, computer, projector, flipcharts etc.
- PowerPoint slides, pictures/ posters depicting various information about the tools and equipment used in construction electrical works.

Say

In this session, we will learn about the types of hand tools and power tools, and their operation and maintenance, types of wood, lifting gears and equipment used in shuttering work.

Ask

- Has anyone used any tools used in shuttering carpentry occupation?

Elaborate

- Types of hand tools and power tools used for shuttering works
- Operation and maintenance of hand and power tools
- Types of woods used in shuttering carpentry works
- Types of plywood
- Lifting operation of shuttering components
- Standard procedure adopted for shifting and stacking of various shuttering carpentry and scaffolding materials

Notes for Facilitation

- Initiate the session with the participants by discussing the objectives of the module.
- Make the session interactive by asking the participants to share their expectations from the module on the blackboard/whiteboard.
- Introduce the topics to be covered and give some information about them.
- Give the participants a general idea about what will be covered in the module.

Activity

- **Topic:** Woods and Plywood in Shuttering Carpentry Works - Identification and Application
- **Purpose:** The purpose of this activity is to educate participants about different types of woods and plywood commonly used in shuttering carpentry works during construction projects. Participants will learn to identify various wood types and plywood grades and understand their applications in shuttering works.
- **Resources:**
  - Samples of different wood types commonly used in shuttering carpentry (e.g., pine, spruce, teak).
  - Samples of plywood sheets with varying grades (e.g., MR grade, BWR grade).
  - Visual aids or diagrams displaying the characteristics and applications of each wood type and plywood grade.

Tentative Duration: 60-90 minutes

Procedure:

- Introduction:
  - Begin by introducing the activity and its objective: to learn about different types of woods and plywood used in shuttering carpentry works.
  - Explain the importance of choosing the right materials for shuttering to ensure quality and durability.
- Presentation on Woods and Plywood:
  - Conduct a presentation or visual demonstration showcasing the different types of woods and plywood used in shuttering carpentry.
  - Display visual aids or diagrams to illustrate the characteristics and applications of each material.
- Divide Participants into Groups:
  - Divide participants into small groups of 3-5 members.
  - Assign each group specific wood types or plywood grades to focus on during the practical demonstration.
- Wood Identification and Characteristics:
  - Provide each group with samples of the assigned wood types.
  - Instruct each group to examine the samples, identify the wood type, and discuss its characteristics and suitability for shuttering works.
- Plywood Identification and Grades:
  - Provide each group with samples of the assigned plywood grades.
  - Instruct each group to inspect the samples, identify the plywood grade, and discuss its properties and applications in shuttering carpentry.
- Group Discussions and Comparisons:
  - Allow time for group discussions where participants can share their findings and insights on the different wood types and plywood grades.
  - Facilitate a comparison of the characteristics and applications of each material within their respective groups.
- Real-World Examples:
  - Present participants with real-world examples of construction projects where specific wood types and plywood grades are commonly used for shuttering.
- Application Demonstration:
  - Provide each group with a simple shuttering carpentry task (e.g., creating a small formwork structure).

        - Instruct each group to use the appropriate wood type and plywood grade for their task based on the knowledge gained from the activity.
    - Hands-on Practice:
        - Allow participants to practice using the selected wood types and plywood grades for their shuttering carpentry task under the supervision of instructors.
    - Conclusion:
        - Summarize the activity by highlighting the significance of using the right wood types and plywood grades in shuttering carpentry works.
        - Reinforce the importance of understanding the properties and applications of each material to ensure effective and efficient shuttering in construction projects.

- **Expected Outcome:** By the end of this activity, participants should have gained practical experience in identifying and understanding different types of woods and plywood used in shuttering carpentry works. They should be familiar with the characteristics and applications of each material and comprehend the importance of selecting the right wood type and plywood grade for specific shuttering tasks. Additionally, participants should recognize how the choice of materials contributes to the quality and effectiveness of shuttering carpentry in construction projects.

Say

Did you find this activity interesting? Can you identify the different types woods used in shuttering works?

Do

- Jot down the crucial points on the whiteboard as the students speak.
- Share your input and insight to encourage the students and add onto what they talk about.
- Ensure that all students participate in the class.

Activity

- **Purpose:** The purpose of this field visit activity is to provide participants with hands-on experience in using various hand tools and power tools commonly employed in shuttering works during construction projects. Participants will learn how to operate, maintain, and handle these tools safely and effectively.
- **Resources:**
    - Different hand tools (e.g., hammers, chisels, measuring tapes, levels).
    - Power tools (e.g., circular saw, drill machine, concrete vibrator).
    - Safety equipment (e.g., helmets, safety goggles, gloves).
    - Instructors or experts familiar with the operation and maintenance of the tools.

- **Tentative Duration:** Half-day or full-day visit, depending on the number of tools and depth of learning desired.
- **Procedure:**
  - Introduction and Safety Briefing:
    - Begin with an introduction to the field visit and its objectives: to gain practical knowledge in using hand tools and power tools for shuttering works.
    - Conduct a comprehensive safety briefing, emphasizing the importance of using personal protective equipment (PPE) and following safety protocols during tool operation.
  - Tool Stations Setup:
    - Set up different tool stations with specific hand tools and power tools relevant to shuttering works.
    - Each station should have one or more instructors to demonstrate tool operation and provide hands-on guidance.
  - Rotational Groups:
    - Divide participants into small rotational groups, ensuring that each group covers all tool stations during the field visit.
    - Assign a group leader or coordinator for each team.
  - Hands-on Operation:
    - Rotate groups through the tool stations, where instructors demonstrate the correct operation of each hand tool and power tool.
    - Participants get hands-on practice under the supervision and guidance of instructors.
  - Maintenance and Care:
    - At each station, instructors should explain the proper maintenance and care required for each tool to ensure its longevity and efficiency.
    - Participants learn how to inspect, clean, and store the tools properly after use.
  - Safe Handling Practices:
    - Emphasize safe handling practices, including proper grip, body posture, and awareness of potential hazards while using the tools.
  - Q&A and Discussions:
    - Encourage participants to ask questions and seek clarifications regarding tool operation and maintenance.
    - Conduct discussions at each station to reinforce learning points and address any doubts or concerns.

- Real-World Applications:
  - Discuss real-world applications of each tool in shuttering works and construction projects.
  - Highlight their significance in enhancing productivity and ensuring quality workmanship.
- Group Presentations:
  - As the field visit concludes, ask each group to present a summary of their learnings and experiences from each tool station.
- Conclusion and Recap:
  - Conclude the field visit activity by summarizing the key points learned about hand tools and power tools used in shuttering works.

- **Expected Outcome:** By the end of this field visit activity, participants should have gained practical experience in operating various hand tools and power tools used in shuttering works. They should be familiar with the correct usage, maintenance, and safety practices associated with each tool. Additionally, participants should understand the significance of using the appropriate tools to improve productivity and ensure quality work in construction projects

Ask

- What safety measures did you observe while using the power tools at the field visit, and how important is it to follow these safety protocols?
- During the field visit, which hand tool or power tool did you find the most challenging to operate, and why? How did the instructors help you overcome the challenges?
- Reflecting on the field visit, how has your understanding of hand tools and power tools evolved, and how do you see yourself applying this knowledge in future construction projects?

Notes for Facilitation

- Arrange the relevant handouts and leaflets for a better understanding of the topics
- Arrange audio-visual aids for a better understanding of the topics.
- Ask the participants if they have any questions.
- Encourage every participant to answer those questions and encourage peer learning in the class.

Exercise

1. Concrete formwork is used as a mould to create concrete parts of a specific size and configuration. Typically, it is constructed for this purpose and then taken down once the concrete has reached an acceptable strength. Concrete forms might occasionally be kept in place to become a component of the long-term building.

Different types of formwork used in construction are:

- Timber Formwork
- Steel Formwork
- Plywood Formwork

2. According to OSHA, the following are the five fundamental safety guidelines for avoiding risks related to the use of hand and power tools:
   - Maintain all tools on a regular basis to keep them in good working order
   - Use the right tool for the job
   - Examine tools for any damage prior use and do not use damaged tools
   - Operate tools according to the manufacturers' instructions
   - Provide proper personal protective equipment (PPE)
3. Good housekeeping on a building site is the procedure of keeping your site neat and orderly. A clean workspace increases fire safety and lowers the likelihood of accidents.
4.
   - Arrange equipment storage to make it convenient to reach.
   - Provide space for trucks, forklifts, and other handling machinery to move safely.
   - Shuttering components should not be used to block access/egress points, emergency exits, safety signs and warnings, or emergency equipment.
   - Provide shuttering components enough support to keep them off the ground.
   - Provide support between layers so that forklifts may handle the appropriate materials.
   - Sort pieces of various sizes into distinct piles.
   - Label part numbers prominently on each stack.
   - Provide containers or boxes for minor parts.
   - Separate and isolate any individual component parts that require repair
5.

S NO	Tool Image	Tool Name
1		Ball Peen Hammer

2		Plumb Blob
3		Circular Saw
4		Tenon Saw
5		Claw Hammer
6		Hack Saw
7		Auger
8		Tri-square

Notes

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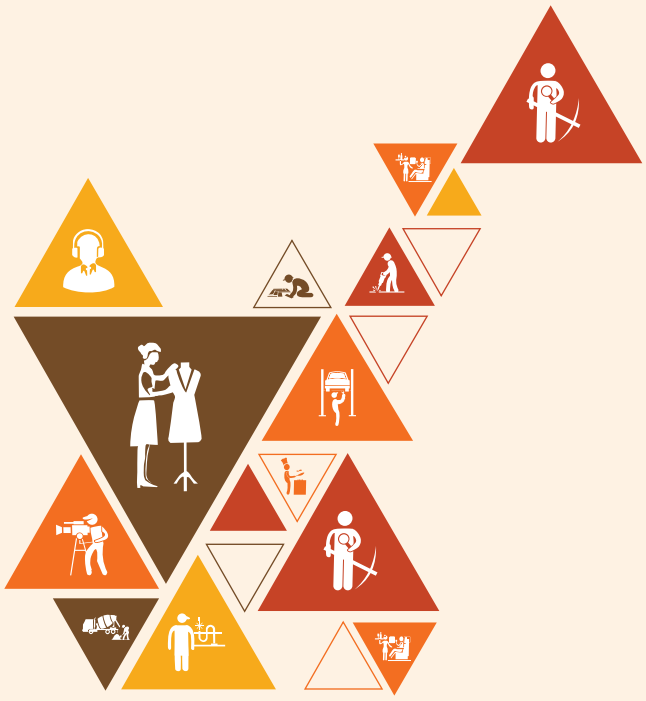
3. Make Wooden Shutter Boards Used in Shuttering Carpentry

Unit 3.1 Wooden Shutter Boards



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Key Learning Outcomes

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

1. Demonstrate marking and measurement on shutter board, cutting to the specified size, planing and drilling of holes of required diameter.
2. Operate hand and power tools used for making shutter boards applying safe work practices
3. Describe the procedure for making shuttering boards
4. Describe different types of timber joints and their areas of applications
5. Explain the process and importance of wood seasoning
6. Demonstrate use of table mounted saw for cutting shutter boards.
7. Demonstrate the use of planing machine for planing shutter boards.
8. Demonstrate making of lap joint, mortis and Tenon, dovetail and housing joints.

Unit 3.1 Wooden Shutter Boards

Unit Objectives

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

1. Demonstrate marking and measurement on shutter board, cutting to the specified size, planing and drilling of holes of required diameter.
2. Operate hand and power tools used for making shutter boards applying safe work practices
3. Describe the procedure for making shuttering boards
4. Describe different types of timber joints and their areas of applications
5. Explain the process and importance of wood seasoning
6. Demonstrate use of table mounted saw for cutting shutter boards.
7. Demonstrate the use of planing machine for planing shutter boards.
8. Demonstrate making of lap joint, mortis and tenon, dovetail and housing joints.

Resources to be used

- Available objects such as whiteboard, duster, marker, notepad, pens, participant handbooks, computer, projector, flipcharts etc.
- PowerPoint slides, pictures/ posters depicting various information about electrification wiring drawings and wall chasing tools and methods.

Say

In this session, we shall learn about wooden shutter boards, procedure of making shutter boards, different types of timber joints, process and importance of wood seasoning and cutting and planing machine.

Ask

- Name some common types of shutter boards used in carpentry work.
- What are the essential characteristics of good-quality shutter boards?

Elaborate

- Marking and Measuring Shutter Boards
- Cutting Shutter Boards
- Types of Timber Joints
- Importance of Wood Seasoning Importance
- Table Mounted Saw
- Planing Machine

Notes for Facilitation

- Initiate the session with the participants by discussing the objectives of the module.
- Make the session interactive by asking the participants to share their expectations from the module on the blackboard/whiteboard.
- Introduce the topics to be covered and give some information about them.
- Give the participants a general idea about what will be covered in the module.

Activity

- **Topic:** Marking, Measuring, and Cutting Shutter Boards
- **Purpose:** The purpose of this practical activity is to provide participants with hands-on experience in marking, measuring, and cutting shutter boards accurately for construction projects.
- **Resources:**
  - Shutter boards (plywood sheets or other suitable material).
  - Measuring tape or ruler.
  - Pencils or markers.
  - Handsaws or power saws (if available).
  - Safety equipment (e.g., safety goggles, gloves).
- **Tentative Duration:** 45-60 minutes
- **Procedure:**
  - Introduction:
    - Begin with a brief introduction to the activity's objective: to learn the essential steps of marking, measuring, and cutting shutter boards accurately.
    - Explain the importance of precise cutting to ensure the quality and fit of shutter boards in formwork.
  - Demonstration:
    - Conduct a demonstration of the marking, measuring, and cutting process using a sample shutter board.

        - Show participants how to measure and mark the desired dimensions on the board correctly.
    - Divide Participants into Groups:
        - Divide participants into small groups of 3-5 members.
        - Provide each group with a shutter board and the necessary tools.
        - Measuring and Marking: Instruct each group to measure and mark the required dimensions on their shutter board based on provided construction drawings or specific instructions.
    - Cutting:
        - If handsaws or power saws are available and safe to use, guide the participants in cutting the marked lines accurately.
        - Emphasize proper sawing techniques and safety precautions.
    - Group Discussions:
        - Encourage participants to discuss their experiences and challenges faced during measuring and cutting the shutter boards.
        - Facilitate discussions on best practices and tips for achieving precise cuts.
    - Quality Check:
        - Review each group's cut shutter boards to check for accuracy and alignment with the required dimensions.
        - Provide feedback and guidance as needed.
    - Hands-on Practice: Allow participants to practice measuring, marking, and cutting additional shutter boards to refine their skills.
    - Real-World Application: Discuss how accurate measuring and cutting of shutter boards contribute to the overall success of formwork in construction projects.
    - Conclusion: Summarize the activity by highlighting the importance of precise measuring and cutting in shutter board preparation for formwork.
- **Expected Outcome:** By the end of this practical activity, participants should have gained hands-on experience in marking, measuring, and cutting shutter boards accurately. They should be familiar with the steps involved in preparing shutter boards for formwork and understand the importance of precision in construction projects. Additionally, participants should be equipped with the knowledge and skills to apply these techniques in their future construction endeavours.

Say

Did you find this activity interesting? Can you see how much information you had previously and how much information you have now? Let's do another activity.

Activity

- **Topic:** Types of Timber Joints
- **Purpose:** The purpose of this demonstrative activity is to introduce participants to various types of timber joints commonly used in woodworking. Participants will learn about the characteristics and applications of lap joints, mortise and tenon joints, dovetail joints, and housing joints.
- **Resources:**
  - Timber pieces of various sizes and dimensions.
  - Woodworking tools (e.g., saw, chisel, mallet).
  - Visual aids or diagrams illustrating each type of timber joint.
- **Tentative Duration:** 60-90 minutes
- **Procedure:**
  - Introduction:
    - Begin with an introduction to the activity's objective: to explore different types of timber joints and understand their uses in woodworking.
    - Explain the significance of selecting appropriate joints for specific woodworking projects.
  - Presentation on Timber Joints:
    - Conduct a presentation or visual demonstration showcasing the four types of timber joints: lap joint, mortise and tenon joint, dovetail joint, and housing joint.
    - Use visual aids or diagrams to illustrate the characteristics and applications of each joint.
  - Divide Participants into Groups:
    - Divide participants into small groups of 3-5 members.
    - Assign each group one or two specific timber joints to focus on during the practical demonstration.
  - Lap Joint Demonstration:
    - Provide each group with timber pieces required for constructing lap joints.
    - Instruct each group to demonstrate the process of creating lap joints, ensuring the pieces fit snugly together.
  - Mortise and Tenon Joint Demonstration:
    - Provide each group with timber pieces required for constructing mortise and tenon joints.
    - Instruct each group to demonstrate the process of creating mortise and tenon joints, emphasizing the strength and stability of this joint.
  - Dovetail Joint Demonstration:
    - Provide each group with timber pieces required for constructing dovetail joints.
    - Instruct each group to demonstrate the process of creating dovetail joints, highlighting the interlocking design and aesthetic appeal of this joint.
  - Housing Joint Demonstration:
    - Provide each group with timber pieces required for constructing housing joints.
    - Instruct each group to demonstrate the process of creating housing joints, showing how this joint is commonly used in bookshelves and cabinets.

- Group Discussions and Comparisons:
  - After each joint demonstration, allow time for group discussions where participants can share their experiences and insights.
  - Facilitate comparisons between the different joints in terms of strength, appearance, and suitability for various woodworking projects.
- Real-World Applications: Discuss real-world examples where each timber joint is commonly used in woodworking projects, such as furniture making or structural carpentry.
- Conclusion:
  - Summarize the activity by highlighting the characteristics and applications of lap joints, mortise and tenon joints, dovetail joints, and housing joints in woodworking.
  - Reinforce the importance of selecting appropriate joints based on the specific requirements and design of woodworking projects.

- **Expected Outcome:** By the end of this demonstrative activity, participants should have gained practical experience in constructing and understanding different types of timber joints. They should be familiar with the characteristics and applications of lap joints, mortise and tenon joints, dovetail joints, and housing joints in woodworking. Additionally, participants should recognize the significance of choosing the right joint for various woodworking projects to ensure structural integrity and visual appeal.

Ask

- Which timber joint do you think is the strongest and most suitable for load-bearing applications? Why?
- During the activity, which timber joint did you find the most challenging to create, and what were the key steps in overcoming that challenge?

Do

- Jot down the crucial points on the whiteboard as the students speak.
- Share your input and insight to encourage the students and add onto what they talk about.
- Ensure that all students participate in the class.

Notes for Facilitation

- Arrange the relevant handouts and leaflets for a better understanding of the topics
- Arrange audio-visual aids for a better understanding of the topics.
- Ask the participants if they have any questions.
- Encourage every participant to answer those questions and encourage peer learning in the class.

Exercise

1. Wooden shutter boards are thick, flat wooden planks used to create formwork, which is the temporary structure used to support wet concrete until it sets and gains sufficient strength. The shutter boards are assembled into a rigid structure that is designed to be strong enough to support the weight and pressure of the wet concrete while also maintaining the shape and dimensions of the final concrete structure. The formwork system is usually made to be removable, allowing the shutter boards to be easily dismantled and reused for other projects.
2. Types of wood used in making shuttering boards:

   Timber wood

   Pine wood

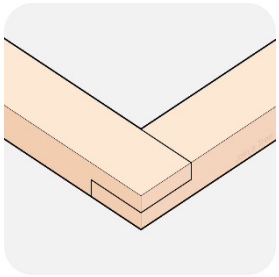
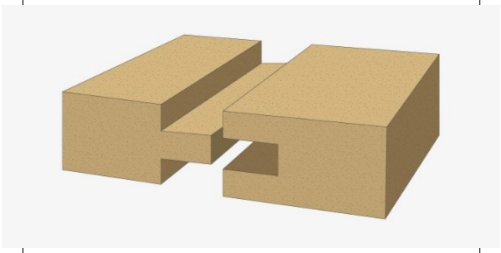
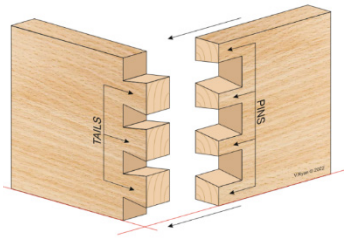
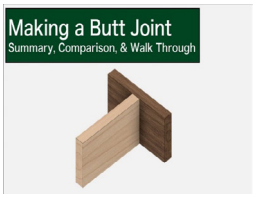
   Teak Wood

   Gurian Wood

   Sal Wood

   Bamboo

   Gulam Wood
3. Power tools used in making shuttering boards:
   - Handheld Circular Saw
   - Handheld Jigsaw
   - Hand Drill Machine
   - Table Mounted Saw
   - Planing Machine
   - Power Drilling Machine
4. The process of wood seasoning.
   - Felling and Log Preparation: Trees are felled and the logs are prepared for processing.
   - Rough Milling: Logs are cut into rough planks using a sawmill or other cutting machine.
   - Air Drying: The rough planks are stacked and left to air dry in a controlled environment for several months, typically outdoors in a location with good airflow and protection from direct sunlight and rain.
   - Kiln Drying: After the initial air drying process, the planks are moved to a kiln for further drying. A kiln is an enclosed space that uses heat and air circulation to reduce the moisture content of the wood.
   - Grading: After the wood is dried, it is graded based on its quality and suitability for different applications.
5. Match the different types of timber joints with their photo given below:

A- Timber Joints	B- Image
1. Butt Joint	
2. Dovetail Joint	
3. Lap Joint	
4. Housing Joint	
5. Tongue and Groove Joint	

Notes

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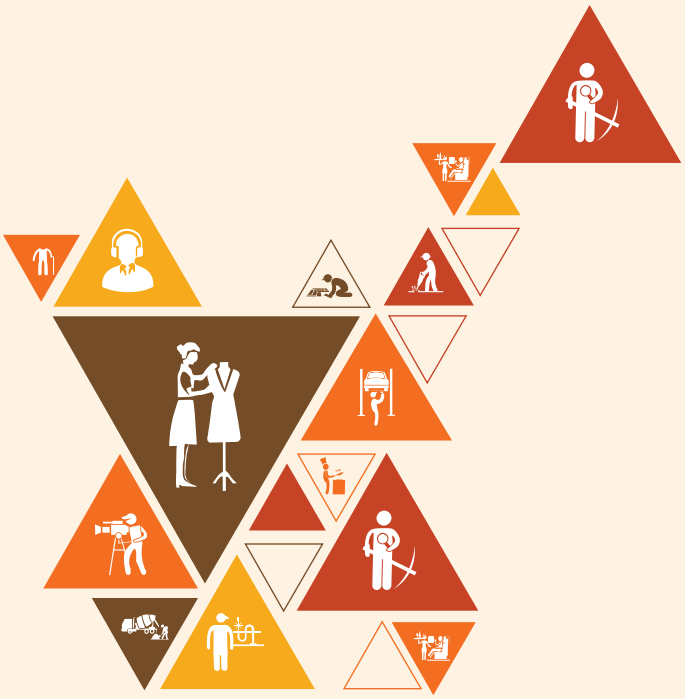
4. Assist in Assembling and Dismantling Conventional Formwork for RCC Structure

Unit 4.1 Assembling and Dismantling Conventional Formwork for RCC Structures



(CON/N0314)

Key Learning Outcomes

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

1. Apply the basic knowledge of units, measurement and arithmetic calculation relevant to shuttering work
2. Describe standard procedure for assembling and dismantling conventional formwork
3. Describe the procedure to provide staging support in shuttering works using bamboos, ballis, wooden channels, wedge, base plate etc.
4. Explain procedure for erection and dismantling of conventional formwork
5. Explain the checks required for line, level and alignment
6. Explain the various ties used in conventional shuttering
7. Demonstrate transfer of level from reference point
8. Demonstrate erection of staging for conventional shuttering
9. Demonstrate aligning and supporting of shutter boards as per instruction
10. Demonstrate erection of aluminium and steel formwork as per instructions.
11. Demonstrate the various checks conducted in erection and dismantling of conventional formwork
12. Demonstrate tying of different types of knots
13. Describe the corrective actions required for maintaining line, level and alignment
14. Demonstrate shifting of materials and tools required for assembling conventional scaffolding
15. Demonstrate safe de-shuttering of shuttering boards and other components as per instruction.

Unit 4.1 Assembling and Dismantling Conventional Formwork for RCC Structures

Unit Objectives

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

1. Apply the basic knowledge of units, measurement and arithmetic calculation relevant to shuttering work
2. Describe standard procedure for assembling and dismantling conventional formwork
3. Describe the procedure to provide staging support in shuttering works using bamboos, ballis, wooden channels, wedge, base plate etc.
4. Explain procedure for erection and dismantling of conventional formwork
5. Explain the checks required for line, level and alignment
6. Explain the various ties used in conventional shuttering
7. Demonstrate transfer of level from reference point
8. Demonstrate erection of staging for conventional shuttering
9. Demonstrate aligning and supporting of shutter boards as per instruction
10. Demonstrate erection of aluminium and steel formwork as per instructions.
11. Demonstrate the various checks conducted in erection and dismantling of conventional formwork
12. Demonstrate tying of different types of knots
13. Describe the corrective actions required for maintaining line, level and alignment
14. Demonstrate shifting of materials and tools required for assembling conventional scaffolding
15. Demonstrate safe de-shuttering of shuttering boards and other components as per instruction.

Resources to be used

- Available objects such as whiteboard, duster, marker, notepad, pens, participant handbooks, computers, projectors, flipcharts etc.
- PowerPoint slides, pictures/posters depicting erection and dismantling of scaffolding.

Say

In this session, we shall learn about the procedure for assembling and dismantling conventional formwork, checks required for line, level and alignment, knots and ties used in conventional shuttering, de-shuttering of shuttering boards.

Ask

- What is the standard procedure of erecting a conventional formwork?

Elaborate

- Procedure for assembling and dismantling conventional formwork
- Checks required for line, level and alignment
- Ties used in conventional shuttering
- Types of knots
- De-shuttering of shuttering boards

Notes for Facilitation

- Initiate the session with the participants by discussing the objectives of the module.
- Make the session interactive by asking the participants to share their expectations from the module on the blackboard/whiteboard.
- Introduce the topics to be covered and give some information about them.
- Give the participants a general idea about what will be covered in the module.

Activity

Topic: Erection and Dismantling of Conventional Formwork

Purpose: The purpose of this field visit activity is to provide participants with practical exposure to the process of erecting and dismantling conventional formwork at a construction site. Participants will gain hands-on experience and knowledge about the correct procedures, safety considerations, and teamwork involved in formwork activities.

Location: A construction site where conventional formwork is being used for concrete casting.

Tentative Duration: Half-day or full-day, depending on the complexity of the construction project.

Pre-Visit Preparations:

- Coordinate with the construction site manager or supervisor to ensure the availability of appropriate formwork activities for the field visit.
- Inform participants about the necessary safety precautions, such as wearing appropriate personal protective equipment (PPE).

Procedure:

- Introduction and Safety Briefing:
  - Start with an introduction to the field visit and its objectives: to observe and learn the process of erecting and dismantling conventional formwork.
  - Conduct a comprehensive safety briefing, emphasizing the importance of following safety

protocols and staying alert during the visit.

- Observation of Formwork Setup:
  - Observe the construction site workers as they set up the formwork for concrete casting.
  - Pay attention to how they position and secure the formwork panels, align them correctly, and ensure the proper reinforcement placement.
- Hands-On Experience - Erection:
  - Divide participants into smaller groups, each accompanied by a skilled worker or supervisor.
  - Assign each group to assist in the erection of a specific formwork section.
  - Participants will get hands-on experience in assembling and securing formwork components.
- Safety and Quality Checks:
  - While assisting in formwork erection, participants will learn how to perform safety checks and ensure the formwork is stable and properly aligned.
  - Emphasize the importance of quality checks to prevent concrete leakage and ensure a smooth surface finish.
- Concrete Casting Observation:
  - Observe the concrete casting process and how formwork prevents the concrete from flowing outside the desired shape.
  - Take note of the necessary precautions taken during concrete pouring.
- Hands-On Experience - Dismantling:
  - After the concrete has cured sufficiently, participants will assist in the dismantling of formwork under supervision.
  - They will learn the correct sequence and techniques for formwork removal without damaging the concrete structure.
  - Formwork Handling and Storage: Participants will be shown how to handle and stack the formwork components safely for reuse or storage.
- Group Discussions:
  - Gather all participants for group discussions after each activity.
  - Encourage them to share their observations, experiences, and any challenges faced during formwork erection and dismantling.
  - Q&A Session: Conduct a Q&A session to address any specific queries participants may have about formwork practices and safety measures.
- Conclusion:
  - Summarize the field visit activity by highlighting the key takeaways from observing and participating in formwork erection and dismantling.
  - Reinforce the significance of teamwork, safety, and attention to detail in ensuring efficient and successful formwork operations.

Expected Outcome: By the end of this field visit activity, participants should have gained practical experience and knowledge of the process of erecting and dismantling conventional formwork. They will understand the importance of safety considerations, quality checks, and proper teamwork in formwork activities. Additionally, participants will appreciate the role of formwork in ensuring the successful casting of concrete structures in construction projects.

Say

Did you find this activity interesting? Can you see how much information you had previously and how much information you have now?

Do

- Jot down the crucial points on the whiteboard as the students speak.
- Share your input and insight to encourage the students and add onto what they talk about.
- Ensure that all students participate in the class.

Notes for Facilitation

- Arrange the relevant handouts and leaflets for a better understanding of the topics
- Arrange audio-visual aids for a better understanding of the topics.
- Ask the participants if they have any questions.
- Encourage every participant to answer those questions and encourage peer learning in the class.

Exercise

1.

a. Snap Ties
b. She-Bolt Ties
c. Flat Ties
d. Loop Tie

2.

Various types of knots used in conventional formwork are:

- Square Knot
- Clove Hitch
- Bowline
- Timber Hitch

3.

The following are the general steps for erecting staging for conventional shuttering:

1. Determine the required height
2. Select the materials
3. Set up the base
4. Install the vertical tubes
5. Install the horizontal tubes
6. Add additional levels
7. Install guardrails
8. Install access ladders
9. Inspect the staging

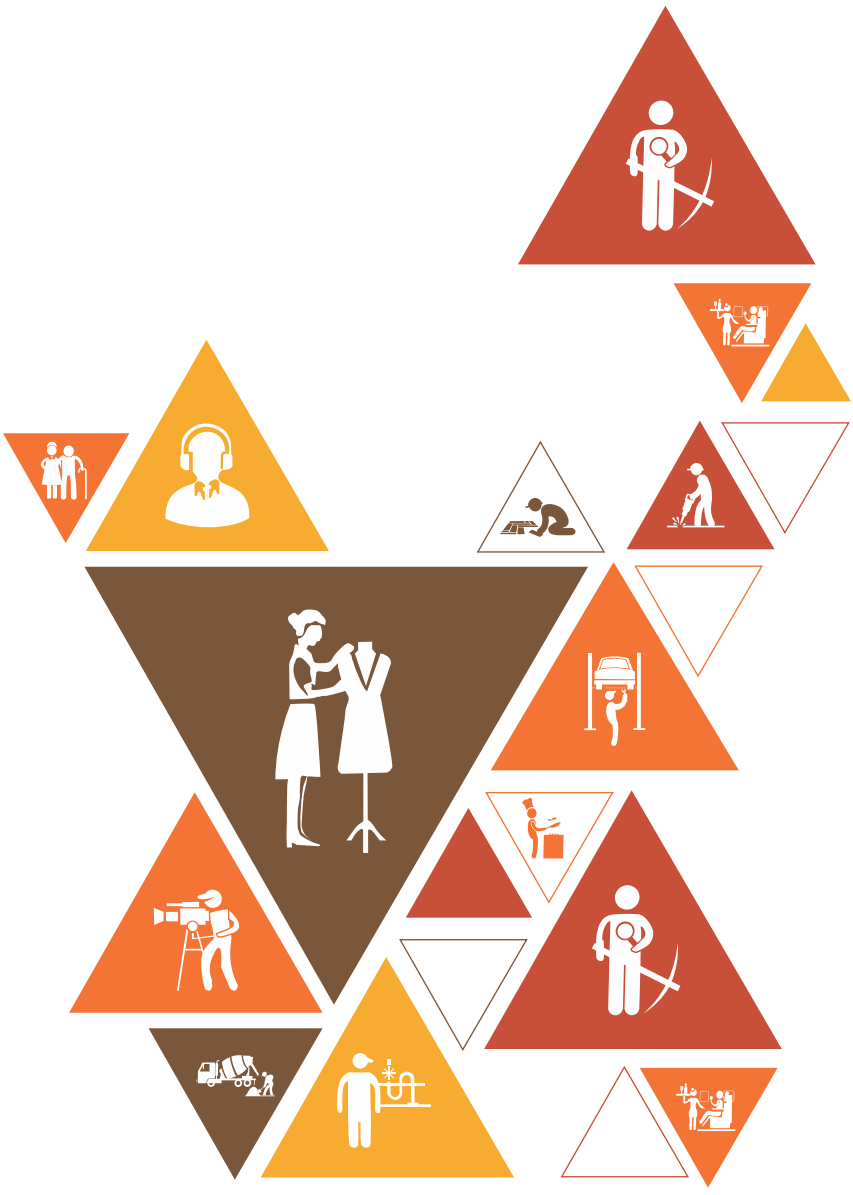
4.
Vertical Safety Check: Checking verticality would be required at various stages of building construction, such as when constructing vertical column formwork and transferring levels up consecutive floors of multi-story constructions.

Methods used to check or control verticality works include:

a. Plumb-bob technique
b. Spirit level
c. Theodolite
d. Optical plummet

Stability Check: Under each foot's contact with the ground, stabilize the scaffolding with solid, flat wood planks. This will prevent your scaffolding from becoming uneven and sinking into muck. Add weight and bracing to prevent the device from toppling.

Notes



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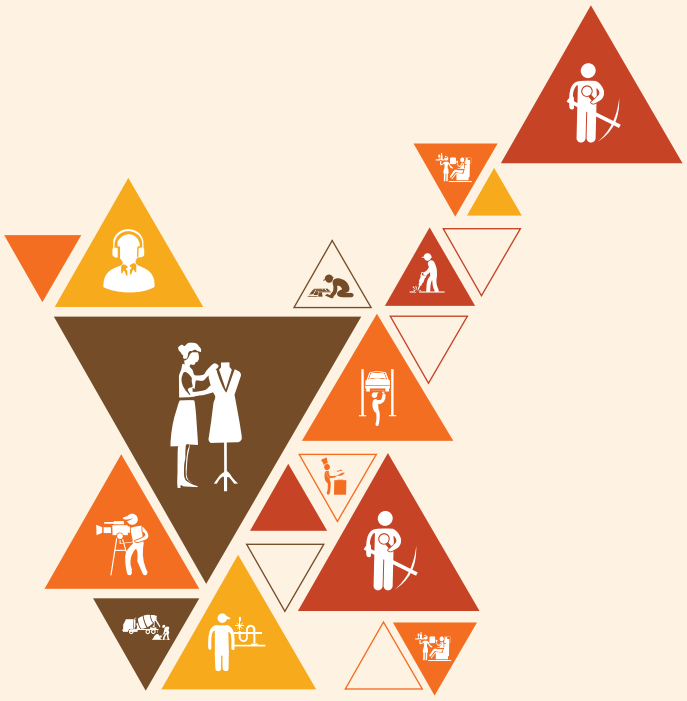
5. Assist in Assembling and Dismantling System Formwork for RCC Structures

Unit 5.1 Assembling and Dismantling System Formwork for RCC Structures



(CON/N0314)

Unit 5.1 Assembling and Dismantling System Formwork for RCC Structures

Unit Objectives

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

- Describe standard procedure for assembling and dismantling system formwork
- Describe the procedure to provide support in shuttering works
- Explain procedure for erection and dismantling of system formwork
- Explain the checks required for line, level and alignment.
- Demonstrate erection of staging/ shuttering for system form works as per instruction.
- Demonstrate the various checks conducted in erection and dismantling of system formwork
- Describe the corrective actions required for maintaining line, level and alignment
- Demonstrate safe de-shuttering of shutter boards and components as per instruction
- Demonstrate shifting of materials and tools required for assembling system scaffolding

Resources to be used

- Available objects such as whiteboard, duster, marker, notepad, pens, participant handbooks, computer, projector, flipcharts etc.
- PowerPoint slides, pictures/ posters depicting various information about importance of effective communication and teamwork at a construction site.

Say

In this session, we shall learn about the standard procedure of erecting and dismantling a system formwork.

Ask

- What is the difference between system and conventional formwork?

Elaborate

- Standard procedure for assembling and dismantling system formwork
- Various checks conducted in the erection and dismantling of system formwork
- Alignment and verticality checks

Notes for Facilitation

- Initiate the session with the participants by discussing the objectives of the module.
- Make the session interactive by asking the participants to share their expectations from the module on the blackboard/whiteboard.
- Introduce the topics to be covered and give some information about them.
- Give the participants a general idea about what will be covered in the module.

Activity

Topic: "Form It Right - Assemble and Dismantle System Formwork"

Purpose: The purpose of this extempore activity is to engage participants in impromptu role-play scenarios related to the standard procedure for assembling and dismantling system formwork. Participants will demonstrate their understanding of formwork operations and the importance of following the correct procedure.

Duration: 30-45 minutes

Instructions for Participants:

- Divide participants into small groups of 3-5 members.
- Each group will receive a scenario card describing a specific formwork assembly or dismantling challenge.
- Groups will have a few minutes to discuss and plan their approach to the scenario.
- Participants will take turns enacting their scenarios in front of the audience, demonstrating the correct procedure for system formwork assembly or dismantling.
- Encourage creativity, accurate portrayal of the steps, and adherence to safety measures.

- **Scenario Cards:**

(Note: Customize the scenarios based on the complexity and level of expertise of the participants)

Scenario 1: Assemble a Column Formwork

- You are part of a construction crew tasked with assembling the formwork for a concrete column.
- Demonstrate the step-by-step process of setting up the formwork panels, installing struts and connectors, and ensuring stability.

Scenario 2: Dismantle Wall Formwork

- You are a skilled formwork specialist responsible for dismantling the formwork after concrete pouring for a retaining wall.

- Show the correct procedure to remove braces, release connectors, and carefully dismantle the panels without causing damage.

Scenario 3: Assemble Slab Formwork with Drop Heads

- You are leading a team assigned to assemble formwork for a concrete slab with drop heads for early striking.
- Showcase how to install the drop heads, align the formwork, and ensure proper support during concrete pouring.

Scenario 4: Dismantle Circular Column Formwork

- You are an experienced formwork engineer involved in dismantling a circular column formwork.
- Demonstrate the method to remove wedges, release ties, and safely dismantle the circular formwork elements.

Scenario 5: Assemble Climbing Formwork for High-Rise

- You are part of a construction crew tasked with assembling climbing formwork for a tall building.
- Illustrate the procedure for erecting the climbing formwork system and progressively climbing it up as construction progresses.

Scenario 6: Dismantle Tunnel Formwork

- You are a formwork supervisor responsible for dismantling the formwork used in a tunnel construction project.
- Show how to systematically remove the tunnel formwork, taking care to handle the segments safely.

- **Debriefing:**

After all the scenarios have been enacted, gather all participants for a brief discussion and debriefing session:

- Highlight the correct procedures demonstrated during each scenario.
- Discuss any challenges faced and how they were overcome.
- Emphasize the significance of following the standard procedure in formwork operations for construction safety and efficiency.

- **Conclusion:**

Conclude the activity by expressing appreciation for the participants' efforts and enthusiasm in demonstrating the correct procedures for assembling and dismantling system formwork. Encourage them to continue learning and practicing these skills in their future construction endeavours.

Say

Did you find this activity interesting? Can you see how much information you had previously and how much information you have now?

Do

- Jot down the crucial points on the whiteboard as the students speak.
- Share your input and insight to encourage the students and add onto what they talk about.
- Ensure that all students participate in the class.

Ask

- What is the importance of stripping time?
- Can you all explain the procedure of erect and dismantling a system formwork?

Exercise

Q.1

a. Steel

b. Formwork

c. Panel Forms

d. Economy

e. Live load

f. Rough

g. One, Two

Q. 2.

The components of wall forms are:

- Panel sheathing
- Studs
- Braces
- Ties and spreaders

Q. 3.

1. Formwork must be designed and laid out such that it can be struck smoothly and sequentially.
2. Concrete's strength, including its ability to support both its own weight and construction loads.
3. Depending on the size, shape, and span of the member, the type of cement, the ambient temperature, the weather, and the degree of curing completed, the removal time will be determined.
4. The corners and edges were undamaged at the time the side form was removed.
5. Slowly loosened and removed wedges, ties, and clamps.
6. Removal times that follow the guidelines in the code of practise (IS 456- 2000).
7. Supports for beams and slabs should be removed in stages, starting at the centre of the span and moving outward.
8. Bolts, nuts, clamps, and wedges are gathered in a box and not carelessly dropped.
9. Steer clear of using crowbars to pry open forms.
10. Wooden wedges were used to pry open the formwork.
11. Carefully descend the forms without dropping or harming them.
12. Panel faces should be gently taken off and lowered without contacting the projections of the scaffold.

13. After removal, panels are set on a surface that is level.
14. Hammered down nail projections.
15. Setting up a perimeter around the region below the proposed site for formwork removal.
16. The presence of a foreman and crane operator who are skilled.

Notes

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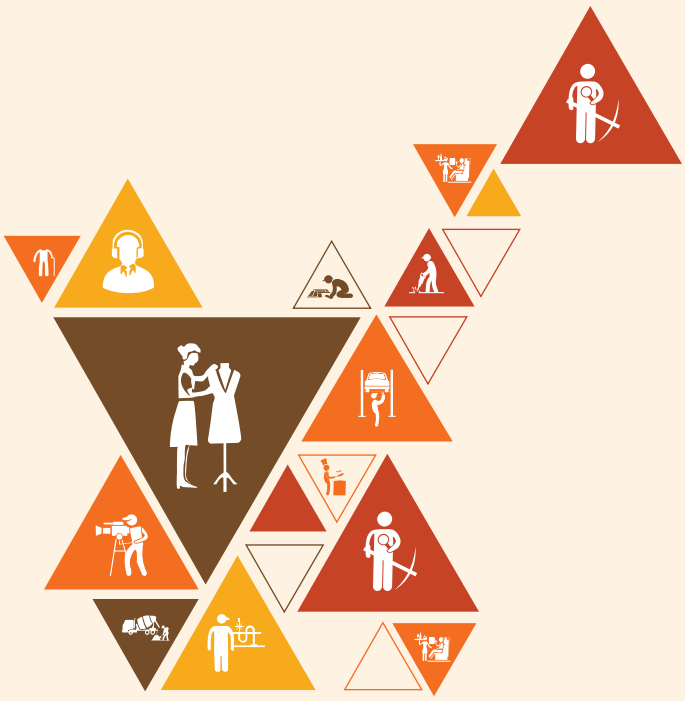
6. Erect and Dismantle Temporary Scaffold

Unit 6.1 Erect and Dismantle a Scaffold



(CON/N9001)

Key Learning Outcomes

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

- Identify different components of scaffold.
- List tools, materials components required for erection of 3.6 meter scaffold.
- Erect a temporary scaffold up to 3.6 metres height.
- Dismantle and stack a temporary scaffold up to 3.6 metres height.

Unit 6.1 Erect and dismantle a scaffold

Unit Objectives

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

- Explain scaffolding and its purpose
- List the common materials and tools used for erection of scaffolding (pipe, cup lock (vertical and ledgers), H- frames, bamboo and balli
- List the functions of different hand tools like hammer, spanner, pulleys, hooks, ropes, etc., used for erection/ dismantling of scaffolds
- List the visual checks to be carried out on the scaffolding components to ascertain their usability
- Identify different components of a temporary scaffolding such as base, toe board, guard rails, platform, walkways, ladder and so on
- Explain the functions of materials, components and accessories used in scaffolding
- Demonstrate preparation of scaffolding base
- Explain the methods adopted for the erection of the scaffold to ensure its safety
- Demonstrate erection of a scaffold up to 3.6 m height using pipes and couplers/ cup lock system/ H frame employing appropriate hand tools
- Explain various checks to be done on completion of erection of scaffolds, such as verticality check, stability check etc.
- Demonstrate the checks required for verticality, rigidity and stability during erection of scaffold.
- Explain the sequence and standard procedure of dismantling and stacking of scaffold
- Demonstrate the dismantling of the erected scaffold.
- Demonstrate the stacking of material, components, tools and accessories during erection and after dismantling.

Resources to be used

- Available objects such as whiteboard, duster, marker, notepad, pens, participant handbooks, computers, projectors, flipcharts etc.
- PowerPoint slides, pictures/posters depicting erection and dismantling of scaffolding.

Say

In this session, we shall learn about scaffolding and its purpose, common materials and tools used for erection and dismantling of scaffolding, visual checks to be carried out on the scaffolding, erection of a scaffold (up to 3.6 m height) using pipes and couplers, etc.

Ask

- Does anyone know what is scaffolding?
- What do you know about erection and dismantling of scaffolding?

Elaborate

In this unit, we will discuss the following topics:

- Scaffolding
- Uses of Scaffold
- Scaffolding Components
- Scaffolding Materials
- Scaffolding Erection and Dismantle
- Hand Tools used in Erection/Dismantle
- Safety Checks
- Safety Check before Dismantling
- Dismantling the Scaffold

Demonstrate

Use a projector and show the following YouTube video- https://youtu.be/VQ1e0VZmTmM to participants on how to erect a scaffold.

Activity

- **Purpose:** The purpose of this practical activity is to demonstrate and familiarize participants with the proper procedures for erecting and dismantling a scaffold safely and efficiently.
- **Resources Required:**
  - A small-scale scaffold structure or scaffold components for demonstration.
  - Safety equipment (e.g., helmets, safety harnesses, gloves).
  - Visual aids or diagrams depicting the steps involved in scaffold erection and dismantling.
- **Tentative Duration:** 60-90 minutes
- **Procedure:**

1. Introduction and Safety Briefing:
   - Begin by introducing the activity and its objective: to learn the correct procedures for safely erecting and dismantling a scaffold.
   - Conduct a safety briefing, emphasizing the importance of using personal protective equipment (PPE) and following safety guidelines throughout the activity.

2. Presentation on Scaffold Erection and Dismantling:
   - Conduct a presentation or visual demonstration showcasing the step-by-step procedures for scaffold erection and dismantling.
   - Use visual aids or diagrams to illustrate each stage of the process.
3. Divide Participants into Groups:
   - Divide participants into small groups of 3-5 members.
   - Assign each group specific stages of scaffold erection and dismantling to focus on during the practical demonstration.
4. Scaffold Erection Demonstration:
   - Provide each group with the scaffold components required for their assigned stages of scaffold erection.
   - Instruct each group to demonstrate the proper procedures for erecting their portion of the scaffold.
5. Hands-on Practice:
   - Allow participants to practice erecting and securing the scaffold components under the supervision of instructors.
   - Emphasize the importance of accuracy and stability during the erection process.
6. Group Discussions and Comparisons:
   - Facilitate group discussions where participants can share their experiences and insights on scaffold erection.
   - Encourage each group to compare and discuss their approaches to ensure a comprehensive understanding of the entire process.
7. Scaffold Dismantling Demonstration:
   - Provide each group with the scaffold components required for their assigned stages of scaffold dismantling.
   - Instruct each group to demonstrate the proper procedures for safely dismantling their portion of the scaffold.
8. Hands-on Practice (Dismantling):
   - Allow participants to practice dismantling the scaffold components while following the correct procedures and safety guidelines.
9. Group Discussions and Feedback:
   - Conduct a group discussion to gather feedback from participants on the challenges faced and lessons learned during scaffold erection and dismantling.
   - Address any questions or concerns raised during the activity.
10. Conclusion:
    - Summarize the activity by emphasizing the importance of following proper procedures and safety guidelines when erecting and dismantling scaffolds.
    - Reinforce the significance of teamwork, communication, and attention to detail in scaffold erection and dismantling processes.

- **Expected Outcome:** By the end of this activity, participants should have gained practical experience in safely erecting and dismantling a scaffold. They should be familiar with the step-by-step procedures and safety considerations involved in scaffold construction and dismantling. Additionally, participants should understand the importance of teamwork, coordination, and adherence to safety guidelines in scaffold erection and dismantling to ensure the safety and efficiency of construction projects.

Notes for Facilitation

- Arrange the relevant handouts and leaflets for a better understanding of the topics
- Arrange audio-visual aids for a better understanding of the topics.
- Ask the participants if they have any questions.
- Encourage every participant to answer those questions and encourage peer learning in the class.

Exercise

1. Scaffolding is a temporary structure used in construction, maintenance, or repair work to provide a platform for workers and materials. Its main purpose is to offer a safe and stable working platform at elevated heights, allowing workers to access hard-to-reach areas on buildings or structures. Scaffolding is crucial for ensuring worker safety and facilitating efficient work processes.
2. Five common scaffolding components include:
    - Standards (upright vertical posts)
    - Ledgers (horizontal members connecting the standards)
    - Transoms (horizontal members placed across ledgers)
    - Braces (diagonal members used to stabilize the scaffold)
    - Scaffold planks (platforms where workers stand or place materials)
3. Steps for dismantling the scaffold: i. Remove all workers and materials from the scaffold. ii. Start at the highest level and remove planks, transoms, and ledgers, working downward. iii. Once each level is clear, dismantle the standards, ensuring they are released gradually and not allowed to drop. iv. After dismantling, organize and store the components properly for future use or transport them safely to another location.
4. Hand tools used in the erection or dismantling of scaffolds include:
    - Scaffold wrench or spanner: For tightening or loosening scaffold fittings.
    - Hammer: For securing scaffold components and driving wedges.
    - Spirit level: To ensure the scaffold is level and plumb.
    - Tape measure: For accurate measurements during assembly.
    - Scaffold belt: A tool belt used to carry small tools and equipment while working on the scaffold.

Notes

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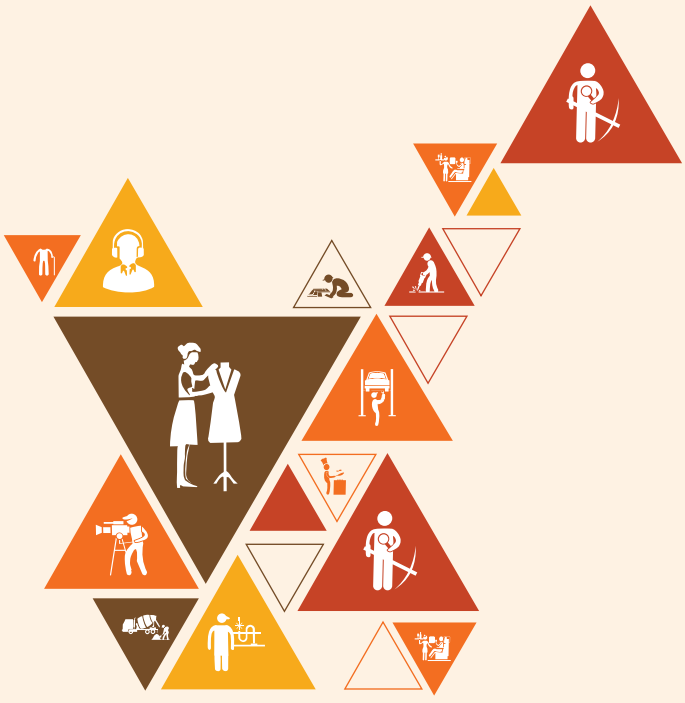
7. Work Effectively in a Team

Unit 7.1 Work effectively in a team



(CON/N8001)

Key Learning Outcomes

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

- Demonstrate effective communication with co-workers, superiors and sub-ordinates across different teams
- Provide support to co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task.

Unit 7.1 Effective Interaction and Communication

Unit Objectives

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

- Demonstrate effective communication skills while interacting with co-workers, trade seniors and others during the assigned task.
- Interpret work sketches, formats, permits, protocols, checklists and other work-related requirements which are to be conveyed to other team members
- Demonstrate effective reporting to seniors while performing the assigned work as per applicable organisational norms
- Explain effects and benefits of timely actions relevant to shuttering carpentry works with examples
- Explain importance of team work and its effects relevant to shuttering carpentry works with examples
- Demonstrate team work skills during assigned task.

Resources to be used

- Available objects such as whiteboard, duster, marker, notepad, pens, participant handbooks, computers, projectors, flipcharts etc.
- PowerPoint slides, pictures/posters depicting erection and dismantling of scaffolding.

Say

In this session, we shall learn about the importance of the effect and benefit of timely actions relevant to Shuttering Carpentry works, the importance of teamwork and its effects relevant to Shuttering Carpentry works, proper and effective communication and its adverse effects, effective communication skills while interacting with various stakeholders, etc.

Demonstrate

Use a projector and show the following link- https://www.youtube.com/watch?v=sEzTXTRo9L4 to participants on how to build effective communication skills.

Ask

- Does anyone know the Cs of effective communication?
- Why do you think it is important for an Assistant Shuttering Carpenter to learn about effective communication?

Elaborate

In this unit, we will discuss the following topics:

- Time Management
- Effective Communication
- Workplace Communication
- Effective Communication with Stakeholders
- Adverse Effects of Poor Communication
- Teamwork at Workplace
- C's of Teamwork
- Enhancing Teamwork in the Workplace
- Construction Reporting
- Interpreting Scope of Shuttering Carpentry Works

Activity

- **Purpose:** The purpose of this activity is to help students understand and practice effective communication skills.
- **Resources Required:** Whiteboard, markers, printed scenarios, timer, and notebooks.
- **Tentative Duration:** 60 minutes
- **Procedure:**
- Introduce the importance of communication.
- Provide communication scenarios to small 4-5 groups.
  - Scenario 1: Safety Briefing for New Workers
  - You are the site supervisor on a construction project, and several new workers have joined the team. The challenge is to conduct a safety briefing for the new workers, ensuring they understand the potential hazards on the site, safety protocols, and the proper use of personal protective equipment (PPE).
  - Scenario 2: Communicating Changes in the Construction Plan
  - During a construction project, unexpected challenges arise, leading to changes in the initial plan. As the project manager, you need to communicate these changes to the entire construction team effectively, addressing their concerns and ensuring everyone is on the same page to avoid delays and confusion.
- Groups discuss and come up with solutions.
- Groups perform role-plays of scenarios.
- Provide feedback after each role-play.
  - Note: Trainer can introduce more similar scenarios
- **Expected outcome:** By the end of this practical activity, students are expected to achieve the following:

- Improved understanding of effective communication.
- Application of knowledge in real-life scenarios.
- Ability to adapt communication style.
- Enhanced collaboration and teamwork.
- Increased confidence in communication skills.

Notes for Facilitation

- Arrange the relevant handouts and leaflets for a better understanding of the topic.
- Arrange audio-visual aids to make them understand effective communication at the workplace- https://youtu.be/V1RQG1nB4Kg
- Ask the participants if they have any questions.
- Encourage other participants to answer those questions and encourage peer learning in the class.

Exercise

1. The 7 Cs of effective communication are clear, concise, concrete, correct, coherent, complete, and courteous.
2. Poor communication in construction projects leads to several issues:
    1. Creating Confusion
    2. Unnecessary Delays
    3. Budget/Cost Overruns
    4. Injuries and Safety Issues
    5. Issues with Stakeholders
3. Every workplace organisation requires communication for day-to-day business, regardless of size, location, goals, etc. It forms a bridge between people to exchange ideas, inform, express their feelings, influence others, etc. Communication is required to communicate within the organisation with managers and employees, etc. and outside with suppliers, buyers, etc.
4. The teamwork can be enhanced in the workplace by following:
    1. Concentrate more on “us” than “me”
    2. Communicate Explicitly
    3. Delegate and believe
    4. Establish shared aims and objectives
    5. Recognize and honour the achievements of others.
    6. Conquer a conflict with success
    7. Build a diverse group
    8. Believe in Team Building

5. The benefits of time management skills to both the person and the company are:

1. Enhanced productivity and performance
2. Providing work on schedule
3. Less anxiety and stress
4. Better-quality work
5. Boosts confidence
6. Reduces procrastination and wasted time
7. Enhances the work-life balance
8. Make better decisions

Notes

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Corporation
Transforming the skill landscape

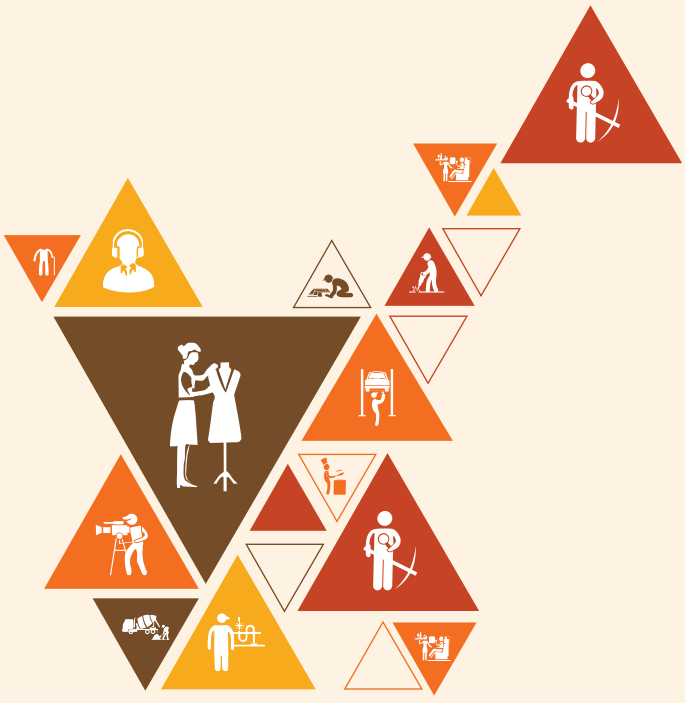
Construction Skill Development Council of India

8. Work According to Personal Health, Safety and Environment

Unit 8.1 Workplace Hazards

Unit 8.2 Fire Safety

Unit 8.3 Safety Measures at Workplace



(CON/N9001)

Key Learning Outcomes

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

- Explain the types of hazards at the construction sites
- Identify the hazards specific to the Shuttering Carpentry work
- Recall the safety control measures and actions to be taken under emergency situation
- Explain the classes of fire and types of fire extinguishers
- Demonstrate the operation of fire extinguisher.
- Demonstrate different methods involved in providing First aid to the affected person.
- Explain the importance of worker participation in safety/mock drills
- Demonstrate the use of all Personal Protective Equipment (PPE) like helmet, safety shoe, safety belt, safe jackets and other safety equipment relevant to shuttering carpentry work
- Explain the reporting procedure to the concerned authority in case of emergency situations
- Describe the standard procedure for handling, storing and stacking of material, tools, equipment and accessories
- Explain different types of wastes produced at a construction site including their disposal method
- Explain the purpose and importance of vertigo test at construction site
- Demonstrate vertigo test
- List out basic medical tests required for working at construction site.
- Explain the types of ergonomic principles adopted while carrying out specific task at the construction
- Explain the types and benefits of basic ergonomic principles, which should be adopted while carrying out specific task at the construction sites.
- Explain the benefits of basic ergonomic principles used at construction sites.
- Explain the importance of housekeeping
- Demonstrate housekeeping practice followed after shuttering works

Unit 8.1 Workplace Hazards

Unit Objectives

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

- Explain the types of hazards at the construction sites
- Identify the hazards specific to the Shuttering Carpentry work
- Recall the safety control measures and actions to be taken under emergency situation.
- Explain the reporting procedures adopted during emergency situations.
- Describe the standard procedure for handling, storing and stacking of material, tools, equipment and accessories.
- Explain the types of ergonomic principles adopted while carrying out specific task at the construction
- Explain the benefits of basic ergonomic principles used at construction sites
- Demonstrate the use of all Personal Protective Equipment (PPE) like helmet, safety shoe, safety belt, safe jackets and other safety equipment relevant to shuttering carpentry work.

Resources to be used

- Available objects such as whiteboard, duster, marker, notepad, pens, participant handbooks, computers, projectors, flipcharts etc.
- PowerPoint slides, pictures/posters depicting the types of hazards at the construction sites, use of PPEs as per work requirements during the Shuttering Carpentry job, etc.

Say

In this session, we shall learn about the importance of the types of hazards at the construction sites and identify the hazards, standard procedure for handling, storing and stacking of material, tools, equipment and accessories, PPEs as per work requirements during Shuttering Carpentry jobs, safety control measures and actions to be taken under an emergency situation, the types and benefits of basic ergonomic principles, etc.

Ask

- Does anyone know the Cs of effective communication?
- Why do you think it is important for an Assistant Shuttering Carpenter to learn about effective communication?

Elaborate

In this unit, we will discuss the following topics:

- Workplace Safety
- Workplace Safety at Construction Site
- Workplace Hazards
- Workplace Hazard at Construction Site
- Hazard Identification and Risk Assessment (HIRA)
- Workplace Warning Signs
- Personal Protective Equipment
- Basic Ergonomic Principles
- Emergency Response Plan for Construction Site

Activity

- **Purpose:** The purpose of this practical activity is to educate students about the importance of Personal Protection Equipment (PPE) used at construction sites.
- **Resources Required:** Various PPE (e.g., hard hat, safety goggles, earplugs, dust masks, reflective vests, gloves, and safety boots), hazard posters, and safety guidelines.
- **Tentative Duration:** 60-90 minutes
- **Procedure:**
  1. Introduction: Discuss workplace safety and PPE's significance.
  2. Hazard Awareness: Identify construction site hazards.
  3. Set up stations with examples of different types of PPE.
  4. Divide the students into groups and assign each group to a station.
  5. Instruct each group to inspect the PPE, discuss its purpose, and identify the types of hazards it protects against.
  6. Allow students to try on the PPE to experience how it fits and functions.
  7. Gather the students for a recap of the key points learned during the activity.
  8. Encourage questions and facilitate a Q&A session to address any remaining doubts.
- **Expected outcome:** The participants will understand PPE's importance, recognize hazards, and know how to use various PPE correctly.

Unit 8.2 Fire Safety

Unit Objectives

By 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.

Say

In this session, we shall learn about fire safety.

Ask

- What will you do if a fire breaks out in the workplace?
- What are the emergency situations?
- Explain the method of using a fire extinguisher.

Demonstrate

Demonstrate the step-by-step evacuation process to the participants; it should include:

- Detection
- Decision
- Alarm
- Reaction
- The movement to an area of refuge or an Assembly station
- Transportation

Also, explain these points, in brief, to make the participants more clear about the process of evacuation and ask them to jot down these points in their notes: -

Clear passageways to all escape routes

- Signage indicating escape routes should be marked.
- Enough exits and routes should be present to allow a large number of people to be evacuated quickly.
- Emergency doors that open easily.
- Emergency lighting where needed.
- Training for all employees to know and use the escape routes.
- A safe meeting point or assembly area for staff.
- Instructions on not using the elevator during a fire.

Elaborate

In this unit, we will discuss the following topics:

- Fire and its Classes
- Fire Safety
- Prevention of a Workplace Fire
- Fire Extinguisher

Say

Let us now participate in an activity to understand the concept better

Activity

- **Purpose:** The purpose of this activity is to educate participants about the various safety signage at construction sites.
- **Resources Required:** Signage posters/PPT of the following
- **Tentative Duration:** 60 minutes
- **Procedure:**
- Show the PPT with various signs used in safety drills.
- Later randomly select the participant and ask them to identify the signage.
- **Expected outcome:** The participant in this activity will be able to recall the various safety signage at construction sites.

Notes for Facilitation

- Arrange the relevant handouts and leaflets for a better understanding of the topics
- Arrange audio-visual aids for a better understanding of the topics.
- Ask the participants if they have any questions.
- Encourage every participant to answer those questions and encourage peer learning in the class.

Unit 8.3 Safety Measures at Workplace

Unit Objectives

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

- Explain the importance of housekeeping.
- Demonstrate safe housekeeping practices followed after shuttering works.
- Explain the importance of worker participation in safety/mock drills.
- Explain the purpose and importance of vertigo test at construction site.
- List out basic medical tests required for working at construction site.
- Demonstrate vertigo test.
- Demonstrate different methods involved in providing First aid to the affected person
- Demonstrate safe waste disposal practices followed at construction site.
- Explain different types of waste at construction sites and their disposal method.

Resources to be used

- Available objects such as whiteboard, duster, marker, notepad, pens, participant handbooks, computers, projectors, flipcharts etc.
- PowerPoint slides, pictures/posters depicting the steps in safety drills, different methods involved in providing First aid to the affected person, safe waste disposal practices followed at construction site, etc.

Say

In this session, we shall learn about the importance of housekeeping works, purpose and importance of vertigo test at construction site, basic medical tests required for working at construction site, different methods involved in providing First aid to the affected person, safe waste disposal practices, etc.

Ask

- Why do you think the safe housekeeping practices are important at construction site?
- Can you tell me how should the construction waste disposed of?

Elaborate

In this unit, we will discuss the following topics:

- Safety, Health and Environment at Work Place

- Good Housekeeping
- Safety Drills at Construction Site
- Medical Examination for Construction Workers
- Vertigo Test
- First Aid
- Treating Minor Cuts and Scrapes
- Waste Management

Activity

- **Purpose:** The participant will learn more about the first aid kits in this activity.
- **Resources Required:** Computer, internet.
- **Tentative Duration:** 1 Hour
- **Process:**
  1. Divide participants into 5 groups and provide them with first aid kit essentials.
  2. Ask them to surf the internet and explain the usage of each item included in the kit.
  3. Alternatively show them a video about the usage and ask them to make notes.
  4. Also, provide them cardboard, paper, scissors, glue stick, and colour pens to make the first aid box.
- **Estimated Outcome:** The participants will have detailed knowledge about first aid kits.

Notes for Facilitation

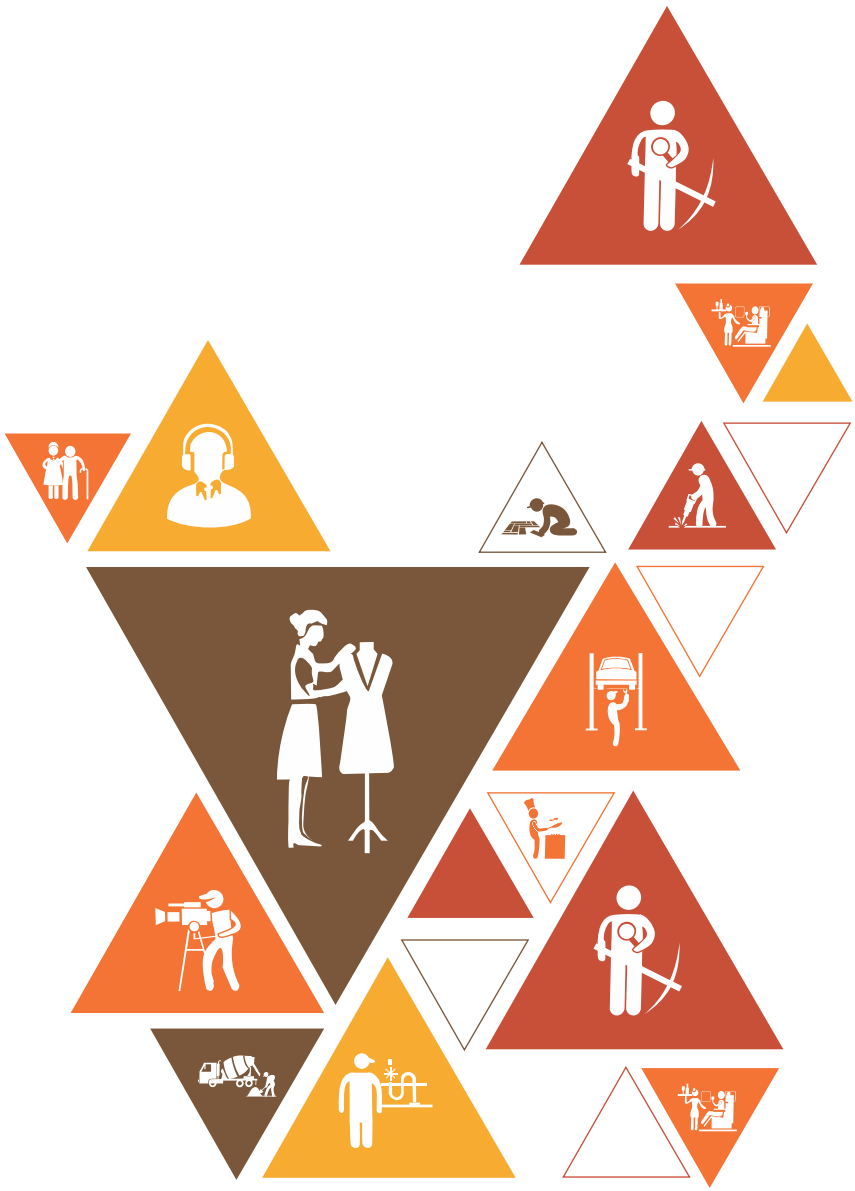
- Arrange the relevant handouts and leaflets for a better understanding of the topics
- Arrange audio-visual aids for a better understanding of the topics.
- Ask the participants if they have any questions.
- Encourage every participant to answer those questions and encourage peer learning in the class.

Exercise

1. There are five main types of fire extinguishers:
   1. Water.
   2. Powder.
   3. Foam.
   4. Carbon Dioxide (CO2)
   5. Wet chemical.

2. Personal protective equipment, or "PPE," is equipment worn to reduce exposure to risks that might result in significant occupational injuries or illnesses. Chemical, radiological, physical, electrical, mechanical, and other job dangers may cause these injuries and diseases.
3. The benefits of workplace safety are:
    - Employee retention increases if they are provided with a safe working environment.
    - Failure to follow OSHA's laws and guidelines can result in significant legal and financial consequences.
    - A safe environment enables employees to stay invested in their work and increases productivity.
    - Employer branding and company reputation can both benefit from a safe working environment.
4. Good housekeeping on construction sites refers to the practice of keeping the site clean and tidy. After all, construction work is messy, and cleaning up now will only result in more mess later. A clean work environment reduces the likelihood of accidents and improves fire safety. There are fewer things to trip you up if there are no materials, waste, or discarded tools.
5. Construction is a hazardous field in which employees must become proficient. Fortunately, safety training can reduce workplace injuries while informing employees of necessary precautions to take.

Notes



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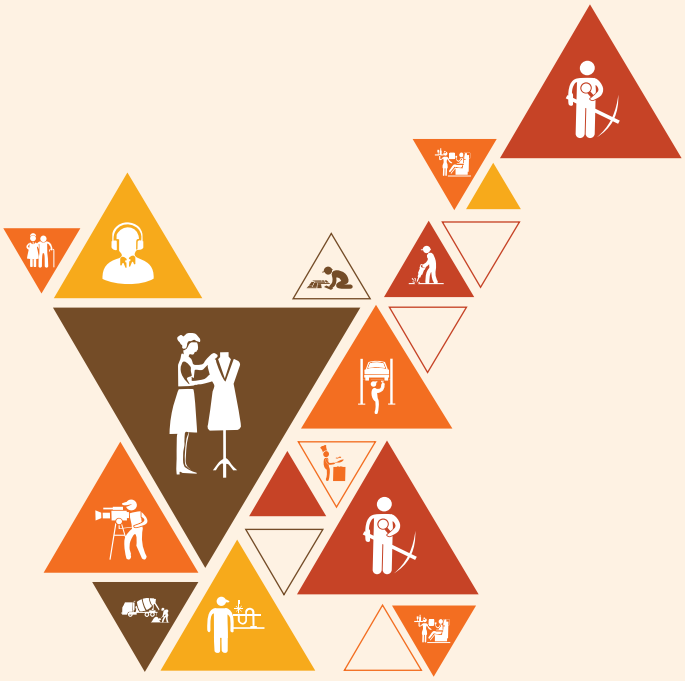

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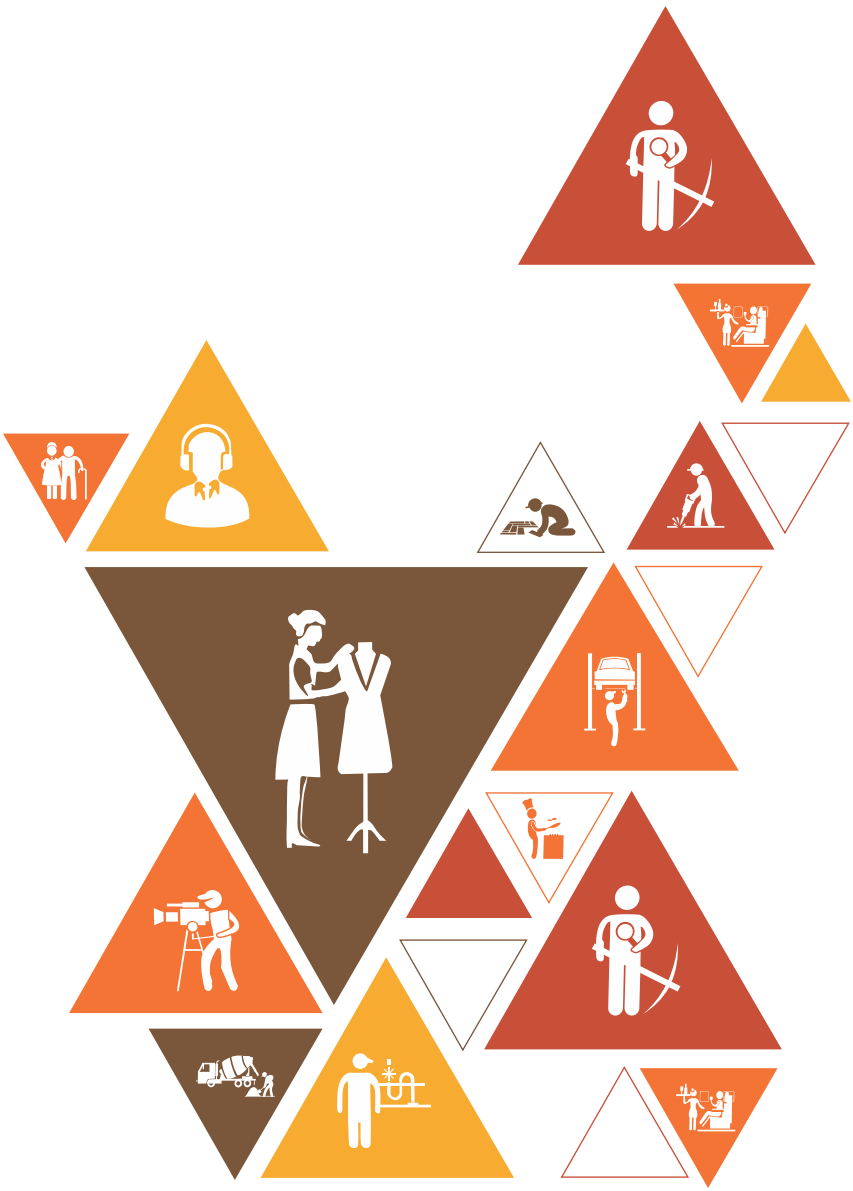
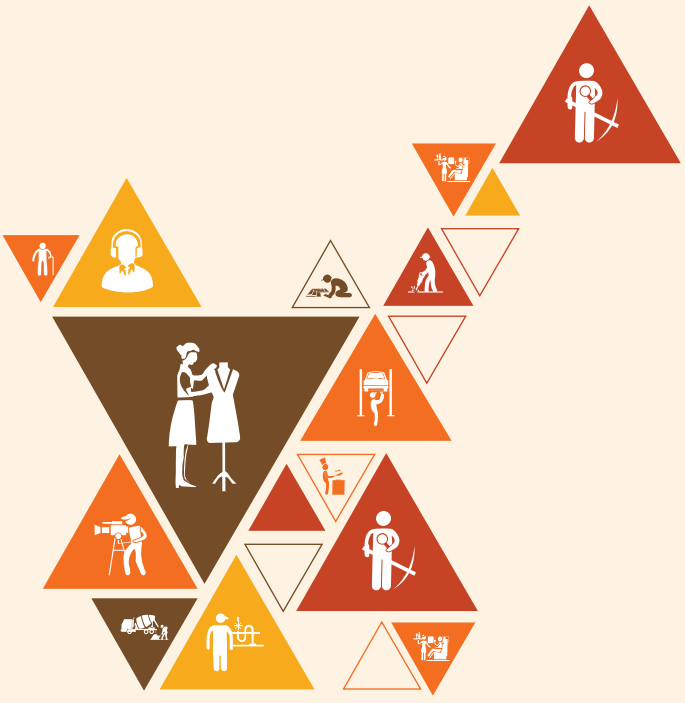


10. Annexures

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:	Assistant Shuttering Carpenter		
Qualification Pack Name & Ref. ID	CON/Q0302		
Version No.	3.0	Version Update Date	31-08-2023
Prerequisites to Training (if any)	Minimum Educational Qualification: 5th Class with 6-12 Months of experience as a certified Helper - Shuttering Carpenter OR 5th Class with 1-2 Years of experience in case of a Non trained worker, in same occupation		
Training Outcomes	After completing this program, participants will be able to: • Operate tools and equipment relevant to shuttering carpentry work • Make wooden shutter boards used in shuttering carpentry works • Provide assistance in assembling and dismantling conventional formwork for R.C.C structures • Provide assistance in assembling and dismantling system formwork for R.C.C structures • Erect and dismantle temporary scaffold up to 3.6 m height • Interact and communicate effectively with co-workers, superiors and sub-ordinates across different teams • Follow safety norms as defined by organization, and adopt healthy and safe work practices.		

S.no	Module name	Session name	Session objectives	NOS reference	Methodology	Training tools/ aids	Duration
1.	Introduction to Shuttering Carpentry occupation T- 08:00 (HH: MM)	1. Icebreaker	• Introduce each other and build rapport with fellow trainees and the trainer • Recall the basic terms used in the occupation of shuttering carpentry	Bridge Module	Classroom lecture, games, group participation, group activity, Expert session	Training Kit- Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop	T- 00:30
		2. Roles and Responsibilities of Assistant Shuttering Carpenter	• Define the role of an Assistant Shuttering Carpenter • Explain the personal attributes required to be an Assistant Shuttering Carpenter • Discuss future possible progression and career options for Assistant Shuttering Carpenter				T- 07:30
2.	Use and maintain tools and equipment relevant to shuttering carpentry T- 08:00 P- 24:00 (HH: MM)	1. Types of hand tools and power tools used for shuttering works	• List the different types of hand and power tools used in shuttering works • Describe the process adopted for care and maintenance of hand and power tools used in shuttering carpentry works • Demonstrate operation of hand tools for cutting, planing and drilling of timber/ plywood. • Demonstrate operation of power tools for cutting, planing and drilling of timber/ plywood.	CON/N0312 PC1, PC2, PC3 PC4, PC5, PC6 PC7, PC8, PC9 P10, PC11 KU1, KU2, KU3, KU4, KU5, KU6, KU7, KU8, KU9, KU10, KU11, KU12, KU13, KU14, KU15, KU16, KU17 KU18, KU19, KU20	Classroom Lecture, Group Participation, Group Activity, Field Visit	Training Kit- Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop	T- 02:00 P- 06:00
		2. Types of wood/Plywood used in	• List the different types of woods used in shuttering				T- 02:00

		shuttering carpentry works	carpentry works • Explain the common defects in wood • Identify common defects in wood visually • List the different types of plywood and their thickness				P- 06:00
		3. Lifting operation of shuttering components	• Describe the various type of slings, shackles and lifting belts • Demonstrate by using slings, shackles and lifting belt for lifting operation of shuttering components.				T- 02:00 P- 06:00
		4. Shift and stack of various shuttering carpentry and scaffolding materials	• Explain the standard procedure adopted for shifting and stacking of various shuttering carpentry and scaffolding materials • Describe ways to optimize use of consumables • Recognize importance of housekeeping and various procedures involved in it				T- 02:00 P- 06:00
3.	Assist in making wooden shutters boards using in shuttering carpentry T- 16:00 P- 40:00	1. Marking Shutter Boards	• Demonstrate marking on the shutter board.	CON/N0313 PC1, PC2, PC3 PC4, PC5, PC6, PC7, PC8, PC9, PC10, PC11, PC12, PC13, PC14, PC15	Classroom lecture, games, group participation, group activity	Training Kit- Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop	T- 02:00 P- 05:00
		2. Measuring Shutter Boards	• Demonstrate measurements on shutter board.				T- 02:00 P- 05:00
		3. Cutting Shutter Boards	• Demonstrate cutting shutter boards to the specified size				T- 02:00 P- 05:00

	(HH: MM)	4. Procedure for making shuttering boards	• Describe the procedure for making shuttering boards	KU1, KU2 KU3 KU4, KU5, KU6 KU7, KU8, KU9 KU10, KU11, KU12, KU13, KU14, KU15, KU16, KU17, KU18, KU19, KU20, KU21			T- 02:00 P- 05:00
		5. Types of Timber Joints	• Describe different types of timber joints and their areas of applications • Demonstrate making of lap joint, mortis and tenon, dovetail and housing joints.				T- 02:00 P- 05:00
		6. Wood Seasoning	• Explain the process and importance of wood seasoning				T- 02:00 P- 05:00
		7. Cutting Machines	• Demonstrate use of table mounted saw for cutting shutter boards.				T- 02:00 P- 05:00
		8. Planing Machines	• Demonstrate planing and drilling of holes of required diameter.				T- 02:00 P- 05:00
4.	Assist in assembling and dismantling conventional formwork for R.C.C structures T- 20:00 P- 47:00 (HH: MM)	1. Knowledge of units, measurement and arithmetic calculation	• Apply the basic knowledge of units, measurement and arithmetic calculation	CON/N0314 PC1, PC2, PC3 PC4, PC5, PC6, PC7, PC8, PC9, PC10, PC11, PC12, PC13, PC14, PC15, PC16, PC17 KU1, KU2 KU3 KU4, KU5, KU6 KU7, KU8, KU9 KU10, KU11, KU12, KU13, KU14, KU15, KU16, KU17, KU18, KU19,	Classroom lecture, games, group participation, group activity, Field Visit	Training Kit- Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop	T- 02:00 P- 05:00
		2. Assembling conventional formwork	• Describe standard procedure for assembling and dismantling conventional formwork				T- 02:00 P- 05:00
		3. Dismantling conventional formwork	• Describe standard procedure for assembling and dismantling conventional formwork				T- 02:00 P- 05:00
		4. Checks required for	• Explain the checks				T- 02:00

		line, level and alignment	required for line, level and alignment • Demonstrate transfer of level from reference Describe the corrective actions required for maintaining line, level and alignment	KU20, KU21, KU22			P- 05:00
		5. Ties used in conventional shuttering	• Explain the various ties used in conventional shuttering				T- 02:00 P- 05:00
		6. Aligning and supporting of shutter boards as per instruction	• Describe the procedure to provide staging support in shuttering works				T- 02:00 P- 06:00
		7. Tying of different types of knots	• Demonstrate tying of different types of knots				T- 02:00 P- 06:00
		8. Shifting of materials and tools required for assembling conventional scaffolding	• Demonstrate shifting of materials and tools required for assembling conventional scaffolding				T- 03:00 P- 05:00
		9. De-shuttering of shuttering boards	• Demonstrate safe de-shuttering of shuttering boards and other components				T- 03:00 P- 05:00
5.	Assist in assembling and dismantling system formwork for R.C.C structures T- 20:00 P- 47:00 (HH: MM)	1. Assembling system formwork	• Describe standard procedure for assembling and dismantling system formwork	CON/N0314 PC18, PC19, PC20, PC21, PC22, PC23, PC24, PC25, PC26, PC27, PC28, PC29, PC30, PC31 KU1, KU2 KU3, KU4, KU5, KU6, KU7, KU8,	Classroom lecture, games, group participation, group activity	Training Kit- Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop	T- 02:00 P- 05:00
		2. Footing forms	• Explain the procedure for erection of system formwork				T- 02:00 P- 05:00
		3. Column forms	• Explain the procedure for erection of system formwork				T- 02:00 P- 05:00
		4. Wall forms	• Explain the procedure for				T- 02:00

			erection of system formwork	KU9, KU10, KU11, KU12, KU13, KU14, KU15, KU16, KU17, KU18, KU19, KU20, KU21, KU22			P- 05:00
		5. Formwork striking times	• Explain the dismantling of system formwork				T- 02:00 P- 05:00
		6. Dismantling system formwork	• Describe the standard procedure for assembling and dismantling system formwork				T- 02:00 P- 06:00
		7. Checks required for line, level and alignment	• Explain the checks required for line, level and alignment				T- 02:00 P- 06:00
		8. Providing support in shuttering works	• Describe the procedure to provide support in shuttering works				T- 03:00 P- 05:00
		9. Erection of staging/ shuttering for system form	• Demonstrate erection of staging/ shuttering for system form works as per instruction				T- 03:00 P- 05:00
		10. Cleaning and storage of formwork	• Explain the importance of cleaning and storing the formwork				T- 02:00 P- 05:00
		11. Shifting of materials and tools required for assembling system scaffolding	• Demonstrate shifting of materials and tools required for assembling system scaffolding				T- 02:00 P- 05:00
6.	Erect and dismantle temporary scaffold up to 3.6-meter height T- 16:00 P- 32:00 (HH: MM)	1. Scaffolding	• Explain scaffolding and its purpose	CON/0101 PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC9, PC10, PC11, PC12 KU1, KU2 KU3, KU4, KU5, KU6, KU7, KU8, KU9, KU10, KU11, KU12,	Classroom lecture, games, group participation, group activity	Training Kit- Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop	T- 02:00 P- 06:00
		2. Components of Scaffolding	• Identify different components of a temporary scaffolding				T- 02:00 P- 06:00
		3. Scaffolding Erection	• List the common materials and tools used for erection of scaffolding (pipe, cup lock (vertical and ledgers), H-frames, bamboo and ballis • Demonstrate				T- 02:00 P- 06:00

			erection of a scaffold up to 3.6 m height	KU13, KU14, KU15, KU16, KU17			
		4. Tools used in Erection/Dismantle	• List the functions of different hand tools like hammer, spanner, pulleys, hooks, ropes, etc., used for erection/ dismantling of scaffolds				T- 02:00 P- 06:00
		5. Safety Checks in Scaffolding	• List the visual checks to be carried out on the scaffolding components to ascertain their usability • Explain various checks to be done on completion of erection of scaffolds, such as verticality check, stability check etc. • Demonstrate the checks required for verticality, rigidity and stability during erection of scaffold				T- 02:00 P- 06:00
		6. Scaffolding Dismantle	• Explain the sequence and standard procedure of dismantling and stacking of scaffold • Demonstrate the dismantling of the erected scaffold				T- 02:00 P- 06:00
7.	Work effectively in a team to deliver desired results at the workplace T- 08:00 P- 16:00 (HH: MM)	1. Time management	• Explain effect and benefit of timely actions relevant to Shuttering Carpentry works with examples.	CON/N8001 PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, KU1, KU2, KU3, KU4, KU5, KU6, KU7, KU8,	Classroom lecture, games, group participation, group activity, field visit	Training Kit- Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop	T- 02:00 P- 04:00
		2. Effective communication	• Explain importance of proper and effective communication and its adverse effects in case of failure of proper				T- 02:00 P- 04:00

			communication. Demonstrate effective communication skills while interacting with co-workers and trade seniors during the assigned task.	KU9			
		3. Team work and effective reporting	• Explain importance of team work and its effects relevant to Shuttering Carpentry works with examples. • Demonstrate team work during assigned task. • Demonstrate effective reporting to seniors as per applicable organisational norms. Instruct subordinates in a clear and precise manner with respect to Shuttering Carpentry works.				T- 02:00 P- 04:00
		4. Construction drawings	• Interpret work sketches Shuttering Carpentry works formats, permits, protocols, checklists etc. • Interpret scope of Shuttering Carpentry works.				T- 02:00 P- 04:00
8.	Work according to personal health, safety and environment protocol at	1. Workplace hazards	• Explain the types of hazards at the construction sites and identify the hazards specific to	CON/N9001 PC1, PC2, PC3, PC4,	Classroom lecture, games, group participati	Training Kit- Trainer Guide, Presentation	T- 03:00 P- 05:00

	construction site T- 08:00 P- 40:00 (HH: MM)		the domain related works. • Describe the standard procedure for handling, storing and stacking of material, tools, equipment and accessories.	PC5, PC6, PC7, PC8, PC9, PC10, PC11, PC12, PC13, PC14, KU1, KU2, KU3, KU4, KU5, KU6, KU7, KU8, KU9, KU10, KU11, KU12, KU14	on, group activity, field visit	s, Whiteboard, Marker, Projector, Laptop Tools and Equipment Required: Safety Helmets, Face shield, Overalls, Knee pads, Safety shoes, Safety belts, Safety harness, Safety Gloves, Safety goggles, Particle masks, Ear Plugs, Reflective jackets, Fire Extinguisher, Fire prevention kit, First Aid box, Safety tags, Safety Notice board	
		2. Use of PPEs and emergency situation	• Use PPEs as per work requirements during Shuttering Carpentry job. • Recall the safety control measures and actions to be taken under emergency situation.				T- 03:00 P- 05:00
		3. Reporting and basic ergonomic principles	• Explain the reporting procedure to the concerned authority in case of emergency situations. • Explain the types and benefits of basic ergonomic principles, which should be adopted while carrying out specific task at the construction sites.				T- 03:00 P- 05:00
		4. Fire safety	• Explain the classes of fire and types of fire extinguishers. • Demonstrate the operating procedure of the fire extinguishers.				T- 03:00 P- 05:00
		5. Safety measures at workplace	• Explain the importance of housekeeping works. • Demonstrate safe housekeeping				T- 03:00 P- 05:00

			practices. • Explain the importance of participation of workers in safety drills. • Explain the purpose and importance of vertigo test at construction site.				
		6. Medical tests and waste disposals	• List out basic medical tests required for working at construction site. • Demonstrate vertigo test. • Demonstrate different methods involved in providing First aid to the affected person • Demonstrate safe waste disposal practices followed at construction site. • Explain different types of waste at construction sites and their disposal method.				T- 01:00 P- 07:00
9.	Employability Skills (30 hours)	1. Introduction to Employability Skills	• Describe the importance of Employability Skills • Prepare a note on different industries, trends, required skills	DGT/VSQ/ N0101	Classroom lecture, discussion, Demonstration, practical, Team Activity: Role play, video session	Training Kit- Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop	01:00
		2. Constitutional values - Citizenship	• Detail the principles of the Constitution of India • Identify the various environmentally sustainable				01:00

			practices				
		3. Becoming a Professional in the 21st Century	• Discuss relevant 21st century skills required for employment. • Practice critical thinking and decision making skill				01:00
		4. Basic English Skills	• Read English text with appropriate articulation. • Practice English words, sentences and punctuation.				02:00
		5. Communicatio n Skills	• Explain the importance of communication at workplace. • Demonstrate effective communication strategies • Demonstrate how to communicate effectively using verbal and nonverbal communication				04:00
		6. Diversity & Inclusion	• Explain the need of diversity at workplace • Identify the various PwD policies applicable at workplace • Discuss the significance of PSH Act				01:00
		7. Financial and Legal Literacy	• Discuss various financial institution, products and services • Explain the common component of salary such as Basic, PF, Allowances (HRA, TA, DA, etc.), Tax				04:00

		8. Essential Digital Skills	• Detail the use and features of various MS Office tools, like MS Word, MS Excel, MS PowerPoint, etc. • Demonstrate how to operate digital devices • Create an email id and follow e- mail etiquette to exchange e -mails • Describe the role of digital technology in day-to- day life and the workplace				03:00
		9. Entrepreneurship	• Describe the types of entrepreneurship and enterprises • Describe the 4Ps of Marketing- Product, Price, Place and Promotion and apply them as per requirement				07:00
		10. Customer Service	• Identify types of customers and how to deal with them • Identify methods to get customer feedback and how to implement them • Explain various tools used to collect customer feedback • Discuss the significance of maintaining hygiene and dressing appropriately				04:00
		11. Apprenticeships	• Practice personal grooming strategies • Illustrate the use of				02:00

		and Jobs	online platforms for job hunting • Detail the concept of Apprenticeship • Demonstrate how to enrol for Apprenticeship programs. • Draft a professional Curriculum Vitae (CV) • Role play a mock interview				

Annexure II- Assessment Criteria

CRITERIA FOR ASSESSMENT OF TRAINEES
For updated Assessment criteria please refer to Qualification Pack of this Job role available at https://www.nqr.gov.in/

Assessment Criteria for CSDCI- Assistant Shuttering Carpenter	
Job Role	Assistant Shuttering Carpenter
Qualification Pack	CON/Q0302
Sector Skill Council	Construction

S. No.	Guidelines for Assessment
1.	Criteria for assessment for each Qualification File 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 Bodies subject to approval by SSC
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.

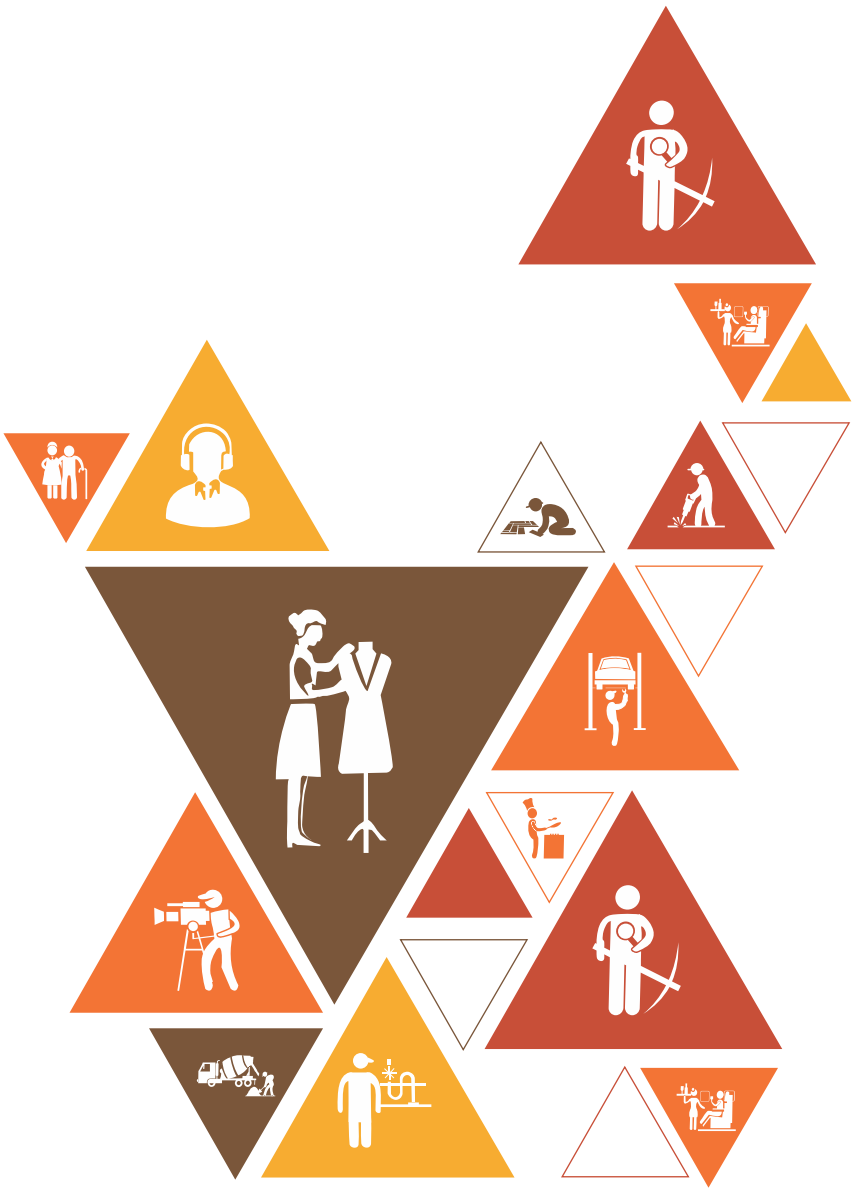
National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CON/N0312.Use and maintain tools and equipment relevant to shuttering carpentry	30	70	-	-	100	20
CON/N0313.Assist in making wooden shutters boards using in shuttering carpentry	30	70	-	-	100	20
CON/N0314.Assist in assembling and dismantling conventional and system formwork for R.C.C structures	30	70	-	-	100	20
CON/N0101: Erect and dismantle temporary scaffold up to 3.6-meter height	30	70	-	-	100	10
CON/N8001: Work effectively in a team to deliver desired results at the workplace	30	70	-	-	100	10
CON/N9001: Work according to personal health, safety and environment protocol at construction site	30	70	-	-	100	10
DGT/VSQ/N0101: Employability Skills	20	30	-	-	50	10
Total	**200**	**450**	**-**	**-**	**560**	**100**

Annexure III- QR Codes –Video Links

Chapter Name	Unit Name	Topic Name	URL	QR Code	Video Duration
Chapter 1: Introduction to Shuttering Carpentry Occupation	Unit 1.1: Introduction to Construction Industry	1.1.1 Construction Industry	https://youtu.be/nndLyZrGfWc	Construction Industry	0:16:51
		1.1.2 Types of Construction	https://youtu.be/1WVzo2U-Fyo8	Types of Construction	0:13:45
		1.1.4 Shuttering Carpentry	https://youtu.be/WIMNbAWM7r8	Shuttering Carpentry	0:01:23
		1.1.5 Common Terminologies used in Shuttering Carpentry	https://youtu.be/SDYRICOTRSs	Common Terminologies used in Shuttering Carpentry	0:07:12
Chapter 2: Operate Tools and Equip- ment	Unit 2.1: Use and maintain tools, components, and equipment	2.1.1 Formwork	https://youtu.be/6x_NxC3hgA8	Formwork	0:10:53
		2.1.4 Timber Formwork	https://youtu.be/KGRRxfucXRk	Timber Formwork	0:04:12

		2.1.6 Plywood Formwork	https://youtu.be/Z176lfv2k-PI	Plywood Formwork	0:02:20
		2.1.7 Wooden Shuttering	https://youtu.be/eGuF5xc5_EM	Wooden Shuttering	0:06:06
		2.1.10 Tools used in Shuttering	https://youtu.be/yyZ5G-B8qQrY	Tools used in Shuttering	0:04:44
Chapter 3: Make Wooden Shutter Boards used in Shuttering Carpentry Works	Unit 3.1: Wooden Shutter Boards	3.1.4 Types of Plywood used in making Shuttering Boards	https://youtu.be/Lk-AlCY-wUdA	Types of Plywood used in making Shuttering Boards	0:05:41
Chapter 4: Assist in Assembling and Dismantling Conventional Formwork for RCC Structure	Unit 4.1: Assembling and Dismantling Conventional Formwork for RCC Structures	4.1.1 Conventional Formwork	https://youtu.be/VA27lB-DEAgE	Conventional Formwork	0:19:30

		4.1.2 Procedure for Erection of Conventional Formwork	https://youtu.be/OAYuQC22Bn0	Procedure for Erec- tion of Convention- al Formwork	0:09:21



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