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Construction Skill Development Council

Facilitator Guide



Assistant Scaffolder – System

Sector
Construction Skill Development Council of India

Sub-Sector
Real Estate and Infrastructure Construction

Occupation
Scaffolding

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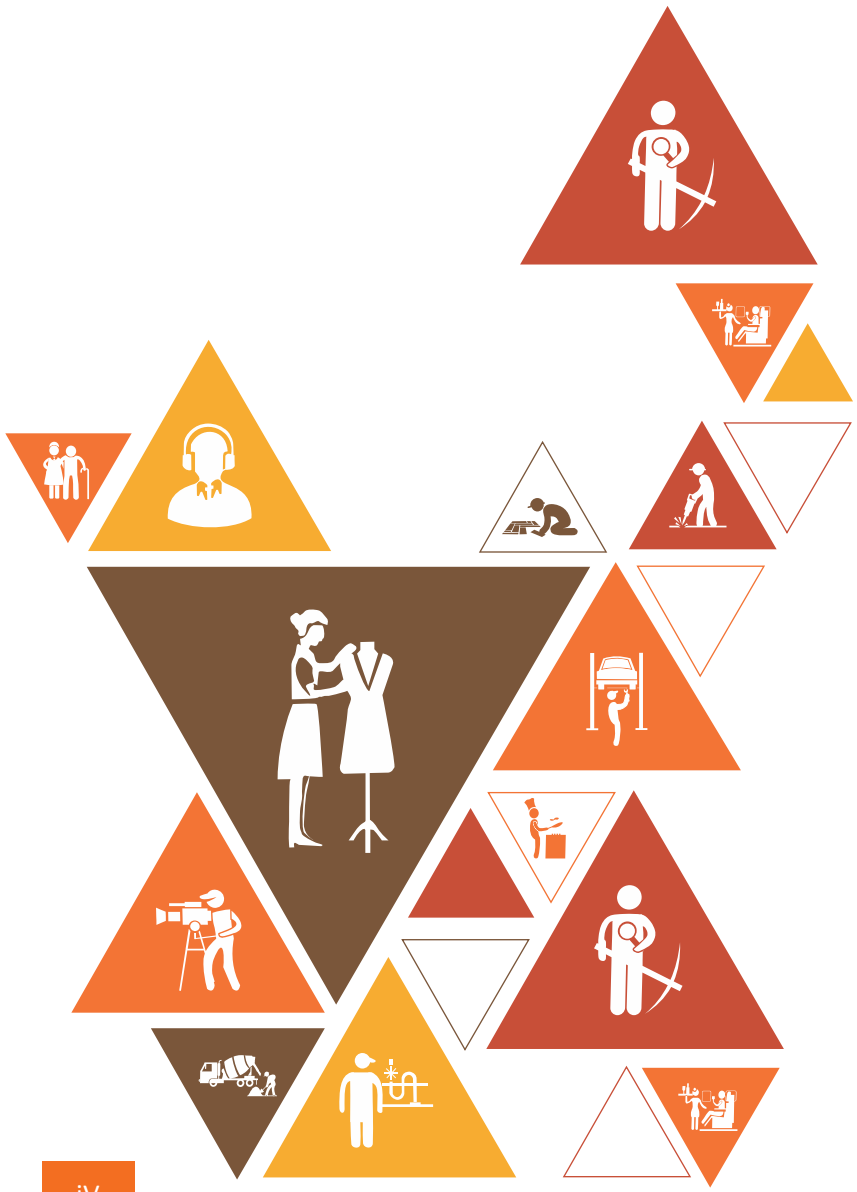
Disclaimer

> 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 the 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 scaffolding 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:

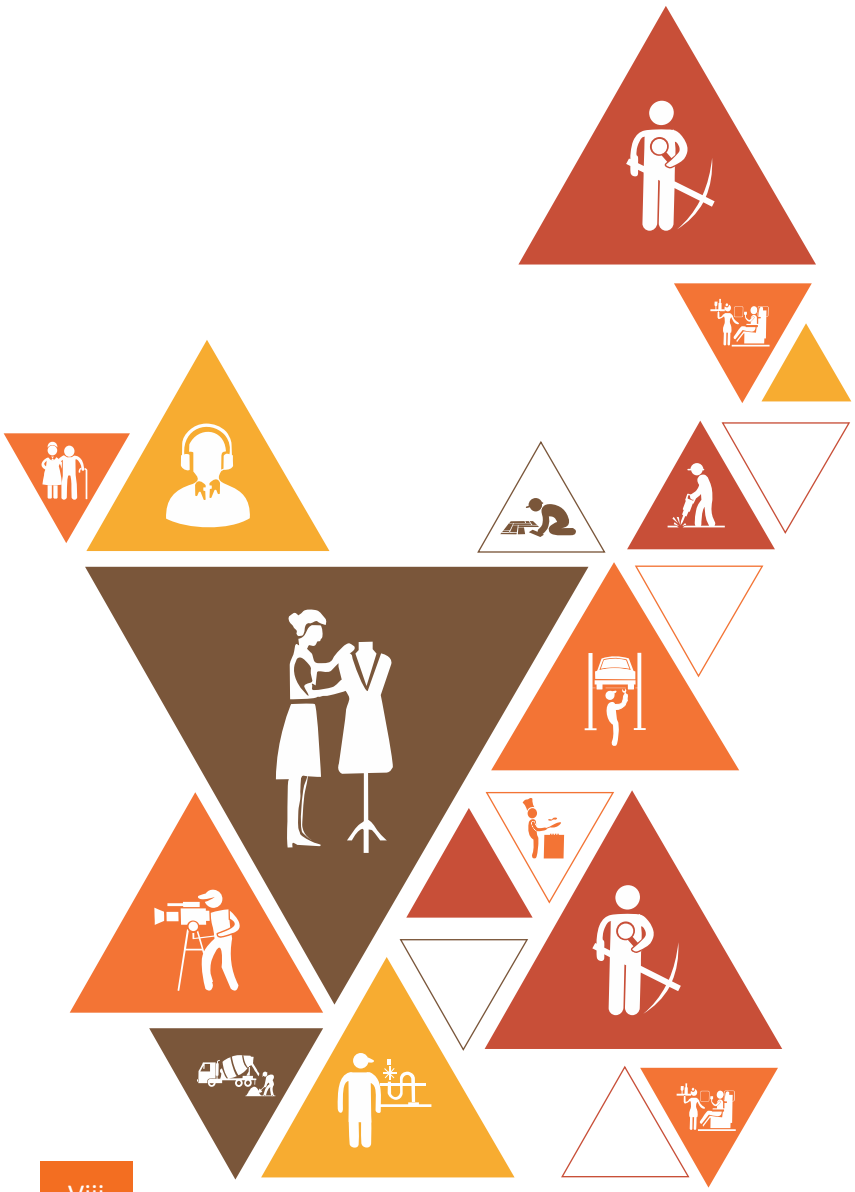
- **Knowledge and Understanding:** Satisfactory operational learning and comprehension to play out the required chore.
- **Performance Criteria:** Pick up the required aptitudes through hands-on preparation and play out the required operations inside the predetermined measures.
- **Professional Skills:** 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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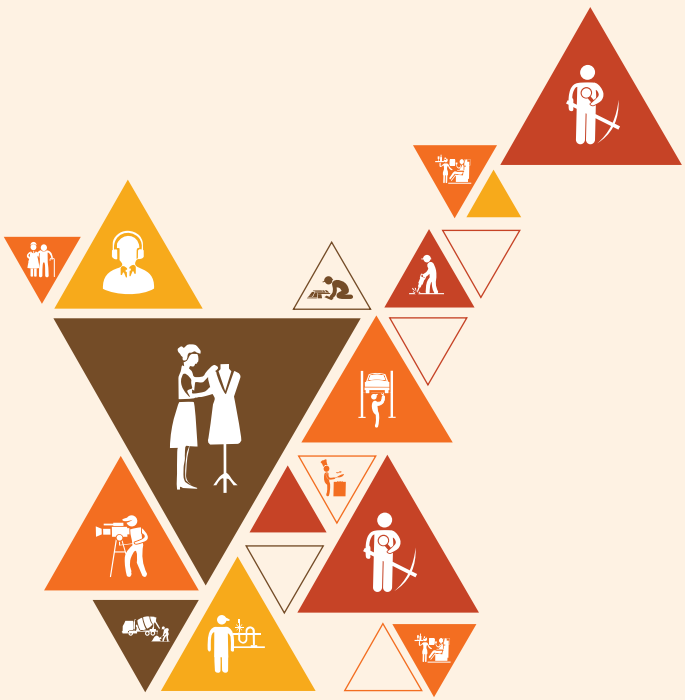
1. Introduction to Scaffolding Occupation

Unit 1.1 - Introduction to Scaffolding

Unit 1.2 - Role and Responsibilities of an Assistant Scaffolder-System



Key Learning Outcomes

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

1. Describe the function and duties of an assistant scaffolder system
2. Apply fundamental unit, measurement, and arithmetic knowledge and skills.
3. Recall the fundamental terms used in the scaffolding industry
4. Discuss potential future progressions and career options for a system assistant scaffolder

Unit 1.1: Introduction to Scaffolding

Unit Objectives

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

1. Give an overview of the construction industry.
2. Recall the basic terms used in scaffolding occupation.
3. Apply the basic knowledge of units, measurement and arithmetic calculation.

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.

Team Activity

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

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 Scaffolding

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.

Team Activity

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

Do 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 Scaffolder – System

Unit Objectives

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

1. Describe the role and responsibilities of an **Assistant Scaffolder – System**
2. Discuss future possible progression and career options for an **Assistant Scaffolder – System**

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 Scaffolder - System.

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 Scaffolder - System.

Ask

- Does anyone know what an Assistant Scaffolder - System 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

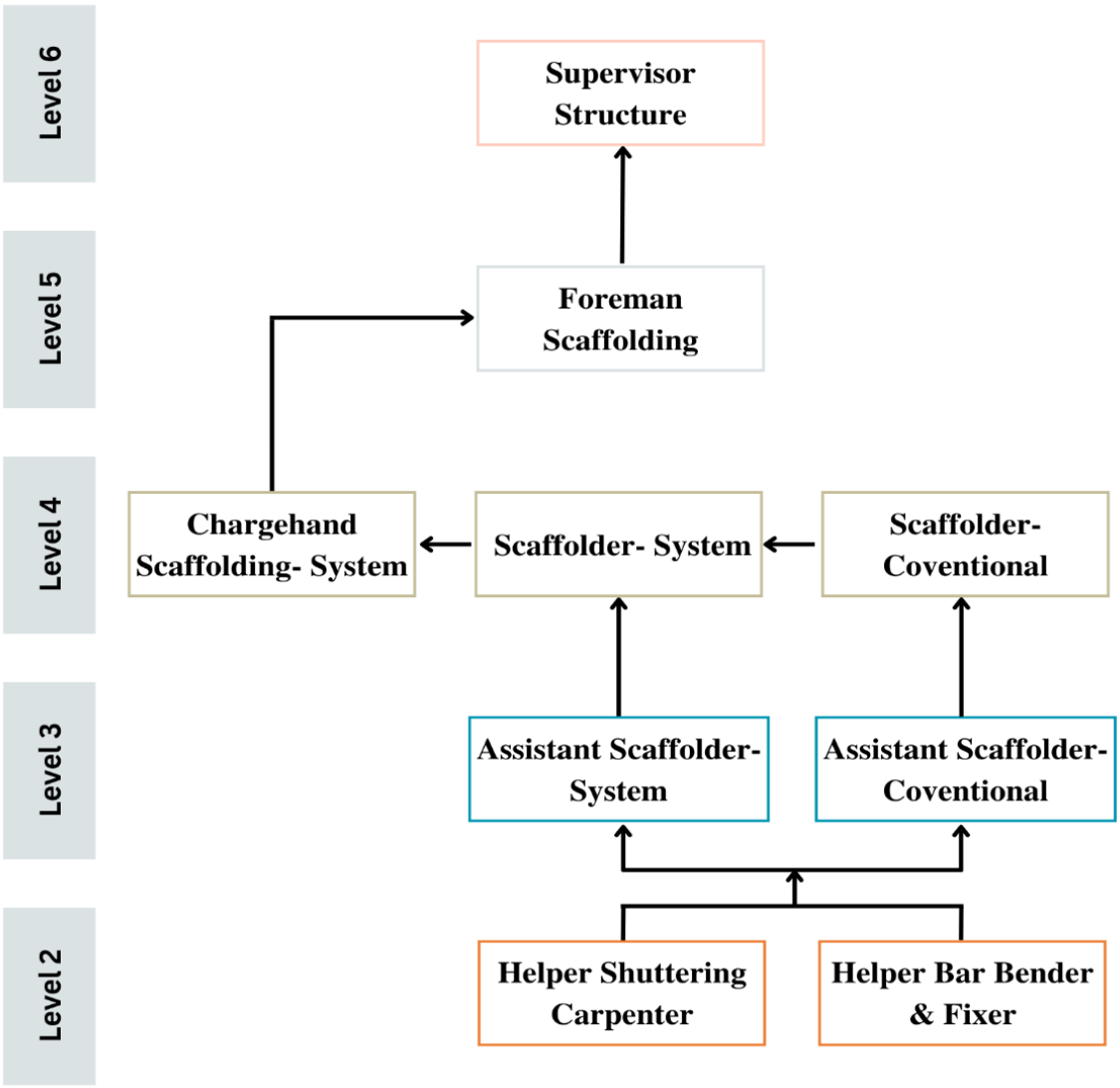


Fig. 1.2.1 Career Progression of an Assistant Scaffolder - System

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

- Test that everyone knows about the skills and key competencies required to become an Assistant Scaffolder - System.
- 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 Scaffolder - System 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:

- ♦ Routine activities of an Assistant Scaffolder - System.
- ♦ 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 onto what they talk about.
- Ensure that all students participate in the class.

Ask

- What are the primary responsibilities of an Assistant Scaffolder - System?

Exercise

Key Solutions to PHB Exercise

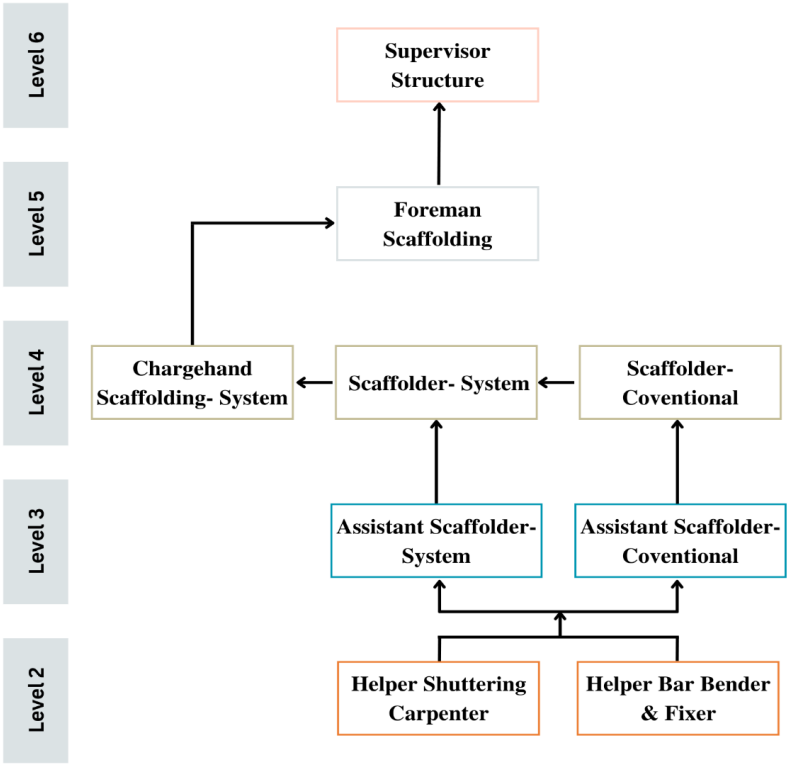
1.

Scaffolding is a temporary structure used to support construction workers, labours, cleaners, inspectors, and others who have to work at height. It is also called staging. Importance of scaffolding:

- Access
- Balance
- Construction ease
- Long-lasting
- Safety
- Functions as a bridge

2.

Show the career path of an Assistant Scaffolder- System.



3.

The roles and responsibilities of an assistant scaffolder- system are:

- Assisting in the erection of a scaffold
- Selecting, shifting and stacking materials and components at workplace
- Handle all required tools, tackles, materials & equipment safely

- Performing markings and measurements
- Assisting in dismantling of scaffold
- Following standard safety procedures and housekeeping practices
- Identifying and reporting any hazards, risks or breaches in site safety

4.

An Assistant Scaffolder–System should be:

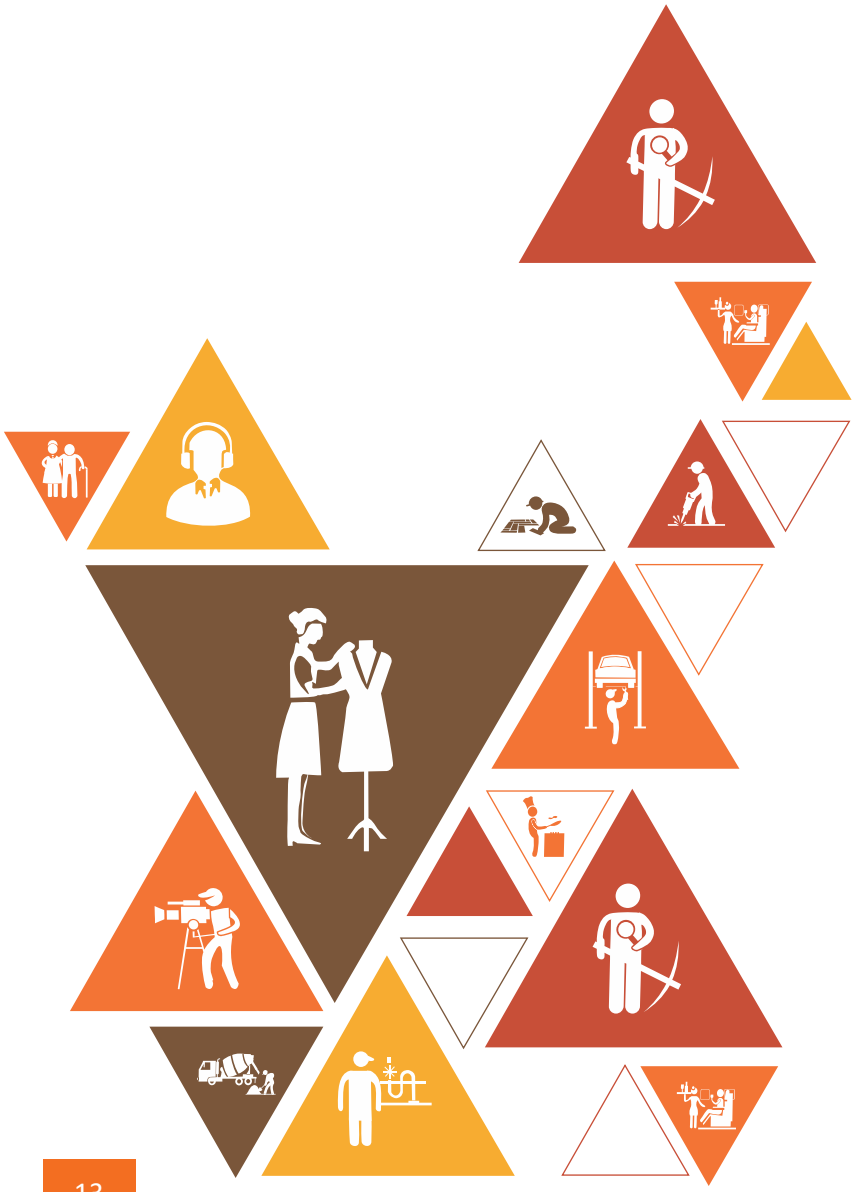
- Physically fit, mentally alert, and safety-minded
- Able to work in different places with different weather and site conditions
- Able to work well as part of a team
- Good in verbal and written communication
- Able to use different tools, materials, and components for scaffolding
- Able to work under continuous instruction and close supervision

5.

The basic arithmetic calculations involved in scaffolding:

- Calculating the overall height of the scaffolding structure
- Determining the number of horizontal supports needed
- Calculating the load bearing of the scaffolding
- Calculating the wind load on the scaffolding
- Calculating the total area of the scaffolding

Notes



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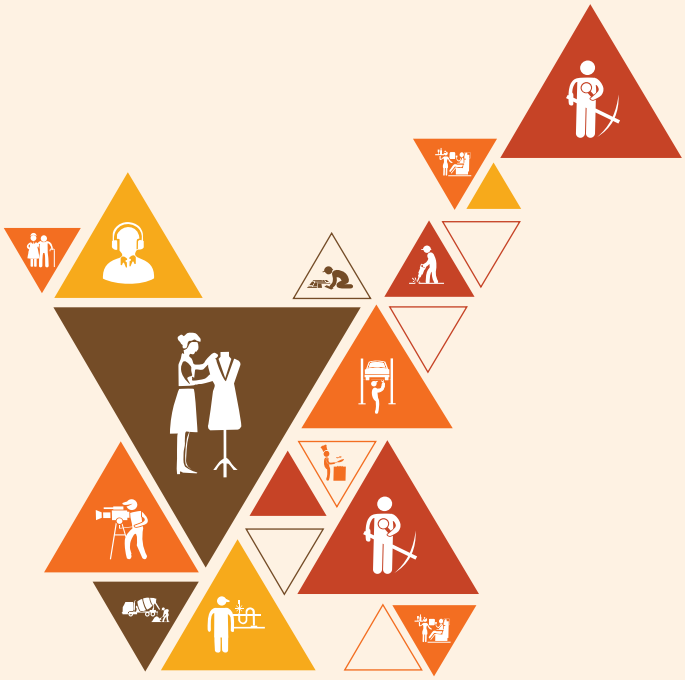
2. Erection and Dismantling of Scaffold Using Pipe and Coupler

Unit 2.1 - Erection and Dismantling of Scaffold Using Pipe and Coupler



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Key Learning Outcomes

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

1. List the various materials, tools and equipment used in pipe and coupler scaffolding along with their standard sizes
2. Explain the applications various materials, tools and equipment used in pipe and coupler scaffolding
3. Explain the process of stacking and storing materials used in pipe and coupler scaffolding work
4. Explain application of slings, shackles, and belts for lifting and shifting of scaffold materials
5. Use different measuring, marking and leveling tools for scaffold erection works
6. Explain common defects in pipes and couplers
7. Identify the common defects in pipes and couplers
8. Describe criteria for selection of pipes, swivel coupler, right angle coupler etc. based upon types of work
9. Describe the sequence and standard procedure for erection of scaffold using pipes and couplers
10. Describe importance of providing supports to scaffold
11. Demonstrate preparation of base for pipe and coupler scaffolding work
12. Describe the measures taken for protection of work and work area
13. Discuss standard procedure for erection and dismantle of pipe and coupler scaffold
14. Summarize knowledge about upkeep, repair and maintenance of tools
15. Demonstrate the preparatory works for scaffold erection including marking and transferring of levels.
16. Demonstrate the erection of pipe and coupler scaffold in single and double staging up to the specified height
17. Demonstrate checks for alignment as per instruction
18. Demonstrate the process of providing support in a pipe and coupler scaffolding works
19. Demonstrate the dismantling of pipe and coupler scaffold in single and double staging up to the specified height

Unit 2.1: Interpret Reinforcement Hand Sketches

Unit Objectives

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

1. List the various materials, tools and equipment used in pipe and coupler scaffolding along with their standard sizes
2. Explain the applications various materials, tools and equipment used in pipe and coupler scaffolding
3. Explain the process of stacking and storing materials used in pipe and coupler scaffolding work
4. Explain application of slings, shackles, and belts for lifting and shifting of scaffold materials
5. Use different measuring, marking and leveling tools for scaffold erection works
6. Explain common defects in pipes and couplers
7. Identify the common defects in pipes and couplers
8. Describe criteria for selection of pipes, swivel coupler, right angle coupler etc. based upon types of work
9. Describe the sequence and standard procedure for erection of scaffold using pipes and couplers
10. Describe importance of providing supports to scaffold
11. Demonstrate preparation of base for pipe and coupler scaffolding work
12. Describe the measures taken for protection of work and work area
13. Discuss standard procedure for erection and dismantle of pipe and coupler scaffold
14. Summarize knowledge about upkeep, repair and maintenance of tools
15. Demonstrate the preparatory works for scaffold erection including marking and transferring of levels.
16. Demonstrate the erection of pipe and coupler scaffold in single and double staging up to the specified height
17. Demonstrate checks for alignment as per instruction
18. Demonstrate the process of providing support in a pipe and coupler scaffolding works
19. Demonstrate the dismantling of pipe and coupler scaffold in single and double staging up to the specified height

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 process of erection and dismantling of pipe and coupler scaffolding.

Say

In this session, we will learn about materials, tools and equipment used in pipe and coupler scaffolding, common defects in pipes and couplers, standard procedure for erection of scaffold using pipes and couplers.

Ask

- What is a scaffold, and what is its purpose in construction or maintenance work?
- Have you ever worked with or used scaffolding before? If yes, please share your experiences?

Elaborate

- Materials, tools and equipment used in pipe and coupler scaffolding
- Application of slings, shackles, and belts for lifting and shifting
- Measuring, marking and leveling tools
- Common defects in pipes and couplers
- Standard procedure for erection of scaffold using pipes and couplers
- Providing supports to scaffold
- Protection of work and work area
- Upkeep, repair and maintenance of tools
- Checks for alignment

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:** Identifying Common Defects in Pipes and Couplers Used in Scaffolding
- **Purpose:** The purpose of this demonstrative activity is to familiarize participants with common defects that can occur in pipes and couplers used in scaffolding. Participants will learn how to

identify these defects and understand the importance of inspecting and maintaining scaffolding components for safety and structural integrity

- **Resources:**
  - Samples of scaffolding pipes and couplers (defective and non-defective).
  - Visual aids or diagrams illustrating common defects.
  - Magnifying glasses or inspection tools (optional).
- **Tentative Duration:** 60 minutes
- **Procedure:**

1. **Introduction:**
   - Begin with an introduction to the activity's objective: to learn how to identify common defects in scaffolding pipes and couplers.
   - Explain the significance of inspecting scaffolding components to ensure safety and structural stability.
2. **Presentation on Common Defects:**
   - Conduct a presentation or visual demonstration showcasing the common defects that can occur in scaffolding pipes and couplers.
   - Use visual aids or diagrams to illustrate each defect (e.g., cracks, bends, corrosion, worn threads).
3. **Group Inspection:**
   - Divide participants into smaller groups, each accompanied by an instructor or expert in scaffolding.
   - Provide each group with a set of sample scaffolding pipes and couplers, including some with defects and others without.
4. **Defect Identification:**
   - Instruct each group to inspect the scaffolding components and identify any defects they find.
   - Encourage participants to use magnifying glasses or inspection tools to aid in the identification process.
5. **Group Discussions:**
   - After the inspection, gather the groups for discussions to share their findings and observations.
   - Facilitate discussions on the significance of each defect and its potential impact on scaffold safety and stability.

6. **Corrective Actions:**
    - Discuss possible corrective actions for addressing each identified defect.
    - Emphasize the importance of timely repairs or replacement to maintain the integrity of the scaffolding system.
7. **Hands-On Demonstration:** Conduct a hands-on demonstration on how to inspect scaffolding pipes and couplers, focusing on defect identification.
8. **Q & A Session:** Encourage participants to ask questions and seek clarifications about defect identification and scaffolding maintenance.
9. **Conclusion:**
    - Summarize the activity by highlighting the importance of regular inspection and maintenance to identify and address defects in scaffolding pipes and couplers.
    - Reinforce the role of participants in promoting scaffolding safety by being vigilant about identifying and reporting defects

- **Expected Outcome:** By the end of this demonstrative activity, participants should have gained practical experience in identifying common defects in scaffolding pipes and couplers. They should be able to recognize the significance of inspecting scaffolding components for safety and structural integrity. Additionally, participants should understand the importance of timely corrective actions to address defects and ensure the reliability of scaffolding systems during construction projects.

Say

Did you find this activity interesting? Can you identify the defects and take corrective measures? Next, we will plan a field visit to a construction site.

Activity

- **Topic:** Scaffold Erection Using Pipes and Couplers
- **Purpose:** The purpose of this field visit activity is to provide participants with a hands-on learning experience on the sequence and standard procedure for erecting a scaffold using pipes and couplers. Participants will gain practical knowledge about scaffold assembly, safety measures, and the correct use of pipes and couplers in construction.
- **Location:** A construction site where scaffolding is being erected using pipes and couplers.
- **Tentative Duration:** Half-day or full-day visit, depending on the complexity of the scaffold and the learning objectives.
- **Pre-Visit Preparations:**

- ♦ Coordinate with the construction site manager or supervisor to ensure that scaffold erection activities are scheduled and can be observed during the field visit.
- ♦ Ensure that necessary safety precautions are in place, and participants are provided with personal protective equipment (PPE).
- ♦ Arrange for an experienced scaffold supervisor or expert to guide the participants during the field visit.

- **Procedure:**

1. **Introduction and Safety Briefing:**
   - Start with an introduction to the field visit and its objectives: to observe and learn the sequence and standard procedure for scaffold erection using pipes and couplers.
   - Conduct a comprehensive safety briefing, emphasizing the importance of adhering to safety protocols during the visit.
2. **Overview of Scaffold Components:**
   - Before visiting the construction site, provide participants with an overview of scaffold components, including pipes, couplers, base plates, and platforms.
3. **Observation of Scaffold Setup:**
   - Visit the construction site and observe the scaffold setup process from start to finish.
   - Pay attention to the sequence of assembly, proper placement of base plates, and the interlocking of pipes and couplers.
4. **Hands-On Experience - Scaffold Erection:**
   - Divide participants into smaller groups, each accompanied by an experienced scaffold supervisor.
   - Assign each group to assist in the erection of a specific section of the scaffold.
   - Participants will get hands-on experience in assembling and securing scaffold components using pipes and couplers.
5. **Safety and Quality Checks:**
   - Instruct participants to perform safety checks during the scaffold erection process, including proper alignment, stability, and bracing.
6. **Q & A and Discussions:**
   - After each group has completed their scaffold erection, gather all participants for a Q & A session.
   - Encourage participants to share their observations, experiences, and any challenges faced during the process.

7. **Demonstration of Dismantling:**
    - If possible, observe the dismantling process of a completed scaffold, highlighting the reverse sequence used for safe and efficient dismantling.
8. **Conclusion:**
    - Summarize the field visit activity by emphasizing the importance of the sequence and standard procedure for scaffold erection using pipes and couplers.
    - Reinforce the significance of adhering to safety guidelines for scaffold assembly and dismantling.

- **Expected Outcome:** By the end of this field visit activity, participants should have gained practical experience and understanding of the sequence and standard procedure for erecting a scaffold using pipes and couplers. They will have learned the correct method of scaffold assembly, safety considerations, and the significance of following the correct sequence to ensure a stable and reliable scaffold structure. Additionally, participants should appreciate the importance of teamwork and safety measures in scaffold erection during construction projects.

Do

- Conduct a group discussion with participants to debrief the field visit experience.
- Ask participants to share their observations and experiences during the scaffold erection process.
- Review the key steps involved in erecting the scaffold using pipes and couplers.
- Discuss the importance of following a standard procedure and sequence for scaffold assembly.
- Reflect on the safety measures observed during the field visit and their significance in scaffold construction.
- 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

Key Solutions to PHB Exercise

1.

The materials, tools and equipment used in pipe and coupler scaffolding are:

- Pipes
- Couplers
- Base plates
- Ledgers
- Transoms
- Braces
- Toe boards
- Scaffold boards
- Ladders
- Safety harnesses

2.

The selection of pipes and couplers for scaffolding structures will depend on the specific requirements of the job at hand, including load capacity, height, compatibility, durability, and ease of assembly. It is important to select pipes and couplers that are fit for purpose and to ensure that they are regularly inspected and maintained to ensure the safety of workers and the stability of the scaffolding structure.

3.

The standard procedure for erection of scaffold using pipes and couplers is as following:

i. Planning
ii. Lay the Base
iii. Build the Standards
iv. Add the Ledgers
v. Install Bracing
vi. Install Scaffold Planks
vii. Add Handrails and Toe boards
viii. Inspect the Scaffold

4.

Steps to prepare the base for pipe and coupler scaffolding work are:

i. Site Preparation
ii. Ground Preparation
iii. Lay the Sole Plates

iv. Secure the Sole Plates

v. Level the Sole Plates

vi. Mark the Location

5.

The standard procedure for dismantling a pipe and coupler scaffold in single or double staging is:

i. Remove all Tools and Materials from the Scaffold

ii. Remove the Working Platform

iii. Remove the Guardrails and Toe-Boards

iv. Remove the Horizontal and Diagonal Braces

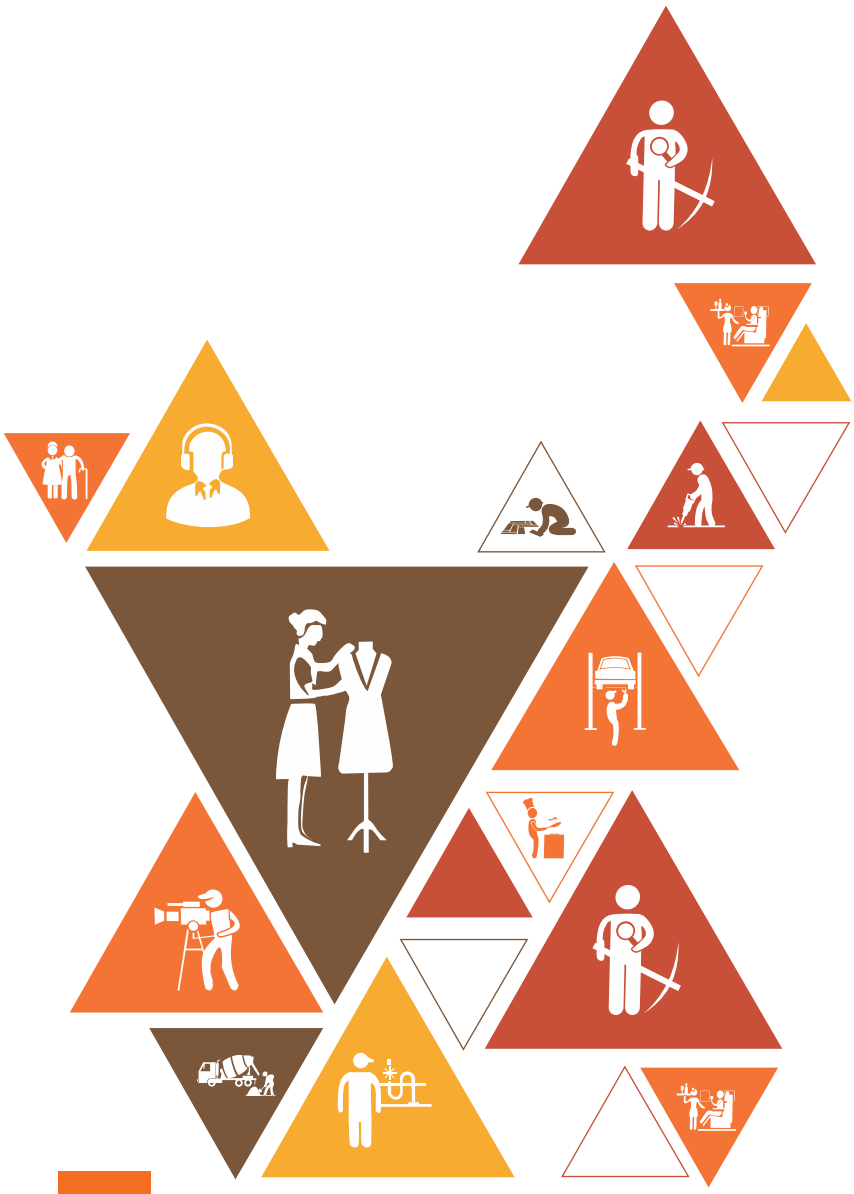
v. Remove the Ledger Beams:

vi. Remove the Standards

vii. Inspect Components

viii. Store Components

Notes



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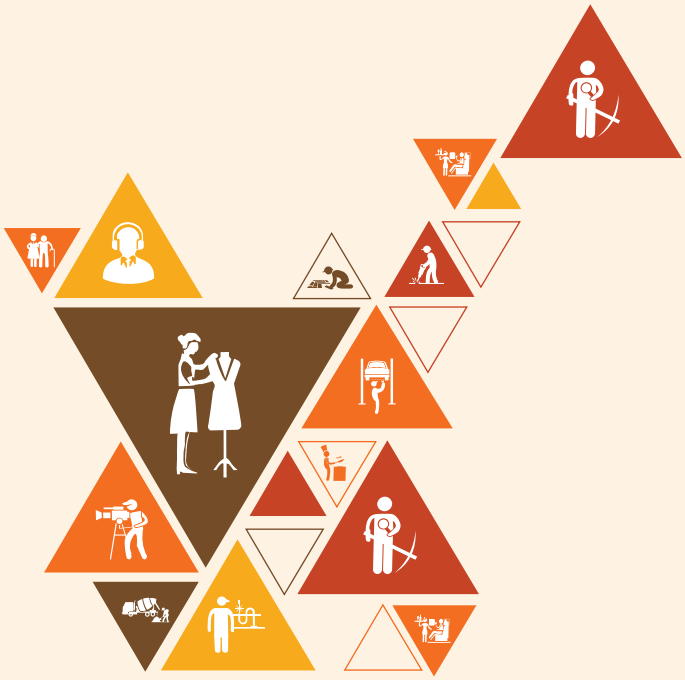
3. Assist in the erection and dismantling of common customized system scaffold

Unit 3.1 - Carry out preparatory works for erection of common customized system scaffold

Unit 3.2 - Erect and maintain common customized system scaffold

Unit 3.3 Dismantle common customized system scaffold



CON/N0355

Key Learning Outcomes

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

1. Explain the different types of customized scaffolds
2. Explain the application of various types of customized scaffolds
3. List the customized scaffolds along with their standard sizes
4. Explain the application of customized scaffolds
5. Define the process of stacking and storing of various materials based upon work requirements.
6. Demonstrate application of slings, shackles, and belts for lifting and shifting of scaffold materials
7. Use measuring, marking and levelling tools
8. Describe common defects in components
9. ●dentify common defects in components of customised scaffold
10. Explain process of preparation of base
11. Describe the measures taken for protection of work and work area
12. Define the criteria for selection of components, tools and equipment etc. as per the types of work
13. Explain the standard procedure for erection of scaffold using in various customized scaffolds
14. Discuss importance of providing supports to scaffolds
15. Discuss the upkeep, repair and maintenance of tools
16. Demonstrate preparation of base for customized scaffolds
17. Demonstrate the erection of customized scaffolds up to specified height
18. Demonstrate checks for alignment of scaffold as per instruction
19. Demonstrate the process of providing support in customized scaffolds
20. Demonstrate the dismantling of customized scaffolds

Unit 3.1: Carry out preparatory works for erection of common customized system scaffold

Unit Objectives

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

1. Explain the different types of customized scaffolds
2. Explain the application of various types of customized scaffolds
3. List the customized scaffolds along with their standard sizes
4. Explain the application of customized scaffolds
5. Define the process of stacking and storing of various materials based upon work requirements.
6. Use measuring, marking and levelling tools
7. Describe common defects in components
8. Identify common defects in components of customised scaffold
9. Discuss the upkeep, repair and maintenance of tools

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 customized scaffolding, its components and the preparatory works to be carried out before erection.

Say

In this session, we will learn about the types of customized scaffolds, their application and preparatory works for erection of common customized system scaffold.

Ask

- What are some common reasons or scenarios where customized scaffolding might be preferred over standard solutions?
- What are the key components of a scaffold system that can be customized? (e.g., platform size, height, configuration, etc.)

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.

Elaborate

- Types of Customized Scaffolds
- Application of customized scaffolds
- Components of Customized Scaffold
- Inspection of components for defects
- Tools used in Erection/Dismantle
- Storing and stacking scaffolding materials

Activity

- **Topic:** Customized Scaffolds - Types, Applications, and Components
- **Objective:** The objective of this classroom activity is to familiarize students with various types of customized scaffolds, their applications in different construction scenarios, and the essential components used in their assembly.
- **Resources:**
  - ♦ Visual aids (e.g., images or diagrams) showcasing different types of customized scaffolds.
  - ♦ Presentation materials (e.g., slides, handouts).
  - ♦ Whiteboard or flipchart for brainstorming.
- **Duration:** 60 minutes
- **Procedure:**
  1. **Introduction (10 minutes):**
     - Start the activity by introducing the topic of customized scaffolds and its significance

in construction projects.

- Explain that customized scaffolds are tailored to meet specific requirements, making them versatile and efficient for various applications.

2. **Types of Customized Scaffolds (15 minutes):**
   - Present different types of customized scaffolds, such as suspended scaffolds, mobile scaffolds, cantilever scaffolds, and rolling scaffolds.
   - Discuss the features, benefits, and typical applications of each type.
   - Use visual aids to help students better understand the structures and functionalities of the scaffolds.
3. **Applications of Customized Scaffolds (15 minutes):**
   - Explain the applications of customized scaffolds in different construction scenarios, such as high-rise buildings, bridges, tunnels, and industrial facilities.
   - Discuss the advantages of using customized scaffolds over traditional scaffolding systems for specific projects.
4. **Components of Customized Scaffolds (15 minutes):**
   - Introduce the essential components used in the assembly of customized scaffolds, including tubes, couplers, platforms, cross-braces, base plates, and leveling jacks.
   - Describe the functions of each component and how they contribute to the stability and safety of the scaffold structure.
5. **Classroom Discussion and Brainstorming (5 minutes):**
   - Engage students in a discussion about real-world examples where customized scaffolds have been used effectively.
   - Encourage students to brainstorm potential modifications or improvements that can be made to standard scaffolding systems to create customized solutions.

- **Expected Outcome:** By the end of this classroom activity, students should achieve the following learning outcomes:
  - Knowledge of Customized Scaffolds
  - Application Awareness
  - Component Familiarity
  - Critical Thinking and Problem-Solving

Say

Did you find this activity interesting? I'm hoping now you have a better idea of the topics covered.

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 3.2 Erect and maintain common customized system

Unit Objectives

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

1. Explain process of preparation of base
2. Describe the measures taken for protection of work and work area
3. Define the criteria for selection of components, tools and equipment etc. as per the types of work
4. Explain the standard procedure for erection of scaffold using in various customized scaffolds
5. Discuss importance of providing supports to scaffolds
6. Demonstrate preparation of base for customized scaffolds
7. Demonstrate the erection of customized scaffolds up to specified height
8. Demonstrate checks for alignment of scaffold as per instruction
9. Demonstrate the process of providing support in customized scaffolds

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 process of erection customized scaffolding.

Say

In this session, we will learn about the process of scaffolding erection, including scaffold foundation, erecting frame scaffolds, tube-and-clamp scaffolds, and systems scaffolds, as well as safety checks.

Ask

- Are there any relevant industry regulations or guidelines that need to be considered when working with customized system scaffolds?
- How do you assess the specific needs of a project to determine the appropriate customization required for the scaffold?

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.

Elaborate

- Scaffolding Erection
- Scaffold foundation
- Erecting a Frame Scaffold
- Erecting Tube-and-Clamp Scaffolds
- Erecting Systems Scaffolds
- Safety Checks

Activity -Field Visit

- **Topic:** Erecting a Frame and Tube-and-Clamp Scaffold
- **Purpose:** The objective of this field visit activity is to provide students with hands-on experience in erecting two different types of scaffolding commonly used in construction - Frame Scaffold and Tube-and-Clamp Scaffold. During this visit, students will learn the step-by-step process of assembling both scaffold types, understand the safety precautions involved, and gain practical insights into the differences and applications of each scaffold.
- **Location:** A construction site where scaffolding is being used or set up. Ensure that all necessary safety measures are in place, and students are provided with appropriate personal protective equipment (PPE).
- **Tentative Duration:** Half-day to a full day, depending on the complexity and size of the scaffold structures.
- **Field Visit Itinerary:**

  1. **Introduction (30 minutes):**
     - Briefly explain the purpose and objectives of the field visit.
     - Discuss the importance of scaffold systems in construction and maintenance work.

- Provide an overview of the two scaffold types: Frame Scaffold and Tube-and-Clamp Scaffold.

2. **Safety Briefing (15 minutes):**
   - Conduct a safety briefing covering essential safety guidelines for working at a construction site and when erecting scaffolds.
   - Emphasize the importance of PPE, proper lifting techniques, and adherence to safety regulations.
3. **Group Division and Demonstration (45 minutes):**
   - Divide students into smaller groups.
   - Each group will observe a demonstration of erecting one type of scaffold (Frame Scaffold or Tube-and-Clamp Scaffold) conducted by an experienced instructor or construction professional.
   - The demonstration will cover the step-by-step process, highlighting key safety measures at each stage.
4. **Hands-on Activity (2 hours):**
   - Each group will be assigned to erect either a Frame Scaffold or a Tube-and-Clamp Scaffold under the guidance of the instructor.
   - Students will actively participate in the assembly process, taking turns to handle various tasks.
   - Emphasize teamwork and communication among the group members.
5. **Comparative Analysis (30 minutes):**

   After the scaffolds are erected, gather all students to compare and contrast the two scaffold types in terms of structure, stability, versatility, and applications.

   Discuss the advantages and disadvantages of each scaffold type.
6. **Q & A and Discussion (30 minutes):**
   - Conduct a question and answer session to address any queries or doubts students may have regarding scaffold erection.
   - Encourage students to share their observations and experiences during the activity.
7. **Conclusion (15 minutes):**
   - Summarize the key learning points from the field visit.
   - Reiterate the importance of safety in scaffold erection and construction practices.

Say

Did you find this activity interesting? Hope you will be assist in erection of a customized scaffold. Now, we will have a short Q/A session.

Ask

- What are the main differences between a Frame Scaffold and a Tube-and-Clamp Scaffold in terms of structure and assembly process?
- What are the advantages of using a Frame Scaffold over a Tube-and-Clamp Scaffold, and vice versa? In which situations would you choose one type of scaffold over the other?
- What safety measures did you observe during the scaffold erection process? Can you mention some critical safety guidelines that should always be followed when working with scaffolds?
- Describe the step-by-step process of erecting the scaffold you were assigned to during the hands-on activity. What were the key elements to ensure stability and load-bearing capacity?
- Did you encounter any challenges or difficulties while erecting the scaffold? How were they addressed, and what did you learn from those experiences?

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.

Notes

Unit 3.3: Dismantle common customized system scaffold

Unit Objectives

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

1. Demonstrate the dismantling of customized scaffolds
2. Describe the measures taken for protection of work and work area

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 process of dismantling customized scaffolding.

Say

- In this session, we will learn about dismantling the scaffold and the hazards involved in scaffolding.

Ask

- Have you had any previous experience with dismantling scaffolds or working at heights? If yes, please share your experiences?
- What are some potential hazards associated with working on scaffolds?

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.

Elaborate

- Dismantling the Scaffold
- Safety Check before Dismantling
- Hazards involved in Scaffolding

Activity -Field Visit

- **Topic:** Dismantling a Customized Scaffold
- **Purpose:** The purpose of this field visit activity is to provide participants with a hands-on experience in dismantling a customized scaffold at a construction site. Participants will learn about the process of dismantling scaffolding safely and efficiently, as well as the importance of following proper procedures.
- **Location:** A construction site where a customized scaffold is in use and scheduled for dismantling.
- **Tentative Duration:** Half-day or full-day, depending on the complexity of the scaffold and the scope of the dismantling process.
- **Pre-Visit Preparations:**
  - ♦ Coordinate with the construction site manager or supervisor to ensure the availability of a customized scaffold for dismantling during the field visit.
  - ♦ Conduct a site safety assessment and identify potential hazards, ensuring that safety measures are in place for the participants' protection.
  - ♦ Provide participants with appropriate personal protective equipment (PPE), such as helmets, gloves, and safety harnesses.
- **Procedure:**

1. **Introduction and Safety Briefing:**
   - Begin with an introduction to the field visit and its objectives: to observe and participate in the dismantling of a customized scaffold.
   - Conduct a comprehensive safety briefing, emphasizing the importance of following safety protocols and staying vigilant during the visit.
2. **Overview of the Customized Scaffold:**
   - Provide an overview of the customized scaffold's design and purpose in the construction project.
   - Explain any unique features or modifications that were made to suit specific project requirements.
3. **Divide Participants into Groups:**

- Divide participants into smaller groups, each accompanied by an experienced scaffolder or supervisor.
- Assign specific sections of the scaffold for each group to dismantle.

4. **Hands-On Dismantling:**
   - Instruct each group to proceed with the dismantling process of their assigned scaffold sections.
   - Participants will learn how to remove planks, braces, and supports systematically, following the standard procedure.
   - Safety and Quality Checks: Emphasize the importance of conducting safety checks during the dismantling process, ensuring stability and preventing potential hazards.
5. **Group Discussions:**
   - After each group completes the dismantling of their scaffold sections, gather all participants for group discussions.
   - Encourage them to share their experiences, challenges faced, and any safety observations made during the process.
6. **Q & A Session:** Conduct a Q&A session to address any questions or concerns raised by participants regarding the dismantling process and safety measures.
7. **Real-World Application:** Discuss real-world examples of customized scaffolds and the factors considered in designing and modifying them for specific construction projects.
8. **Conclusion:**
   - Summarize the field visit activity by highlighting the key takeaways from observing and participating in the dismantling of a customized scaffold.
   - Reinforce the significance of following proper procedures and safety guidelines in scaffold dismantling for construction projects.

- **Expected Outcome:** By the end of this field visit activity, participants should have gained practical experience in dismantling a customized scaffold. They will understand the process of safely and efficiently dismantling scaffold structures, as well as the importance of adhering to safety protocols. Additionally, participants will appreciate the complexities involved in customizing scaffolds to meet the unique requirements of construction projects

Say

Did you find this activity interesting? I'm hoping now you have a better idea of the topic covered.

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

Key Solutions to PHB Exercise

1.

The different types of scaffolds are:

i. Wooden & Bamboo Scaffolding

ii. Single or Brick layer Scaffoldings

iii. Double or Mason's Scaffolding

iv. Tubular Scaffolding

v. Tube & Clamp Scaffolding

vi. Cantilever or Needle Scaffolding

vii. Suspended or Swinging Scaffolding

viii. Systems Scaffolding

ix. Frame & Brace Scaffolding

x. Mast Climbing Scaffolding

xi. Shoring Scaffolding

(Explain each)

2.

The different types of tools used in erection and dismantling a scaffolding are:

i. Good Pair of Boots & Gloves

ii. Scaffold Wrench

iii. Adjustable Wrench or Crescent Wrench

iv. Claw Hammer/ Scaffold Hammer

v. Pulleys

vi. Hooks

vii. Ropes

viii. Measure Tape

ix. Pipe Cutter

x. Scaffolding Tool Belt & Holders (Frogs)

3.

The process of erecting a scaffold is as follows:

i. Establish the foundation

ii. Level it

iii. Consider casting devices

iv. Guarantee good assembly

v. Place the planks

vi. Identify access

vii. Mount guardrails

viii. Observe it.

4.

The process of dismantling a scaffold is as follows:

Step 1: Make space for the disassembled scaffolding components.

Step 2: Put safety equipment

Step 3: Remove scaffolding components from the top to the bottom

Step 4. Remove scaffolding anchors

Step 5: Check the scaffolding components

5.

The hazards involved in erecting and dismantling a scaffold are:

i. Climbing Up and Down

ii. Breaking or Planks Sliding Off

iii. Overloading or improper loading

iv. Platforms are not completely decked

v. Platforms with no Guardrails

vi. Not installing all necessary components

vii. Electrical Interaction with Above-Roof Wires

viii. Rolling scaffolds are moved with workers on platform.

Notes

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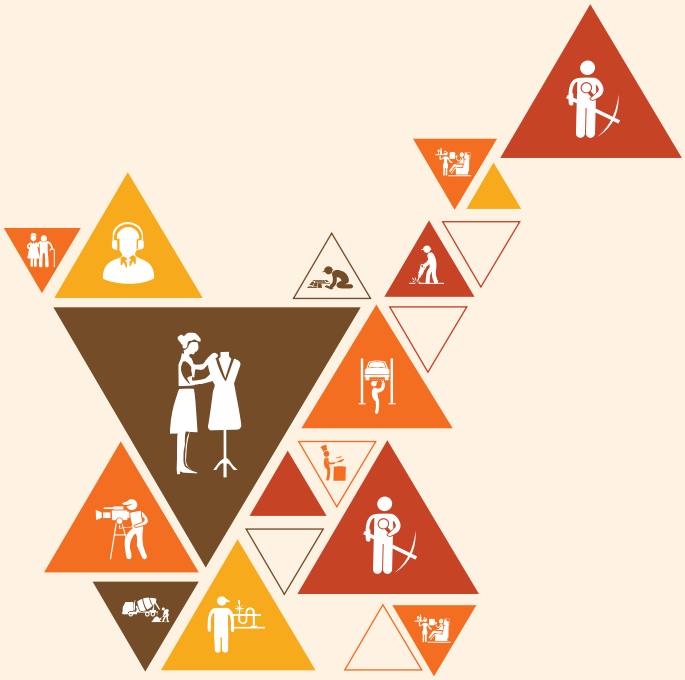
4. Work Effectively in a Team

Unit 4.1 - Work effectively in a team



CON/N8001

Key Learning Outcomes

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

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

Unit 4.1: Effective Interaction and Communication

Unit Objectives

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

1. Demonstrate effective communication skills while interacting with co-workers, trade seniors and others during the assigned task.
2. Interpret work sketches, formats, permits, protocols, checklists and other work-related requirements which are to be conveyed to other team members
3. Demonstrate effective reporting to seniors as per applicable organisational norms.
4. Explain effects and benefits of timely actions relevant to system scaffolding works with examples
5. Explain importance of team work and its effects relevant to system scaffolding works with examples
6. 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 effective interaction and communication at the workplace.

Say

In this session, we shall learn about the importance of the effect and benefit of timely actions relevant to Scaffolding works, the importance of teamwork and its effects relevant to Scaffolding works, proper and effective communication and its adverse effects, effective communication skills while interacting

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 Scaffolder - System 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 Scaffolding Works

Activity -Roleplay

- **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:

1. Improved understanding of effective communication.
2. Application of knowledge in real-life scenarios.
3. Ability to adapt communication style.
4. Enhanced collaboration and teamwork.
5. 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

Key Solutions to PHB 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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Transforming the skill landscape

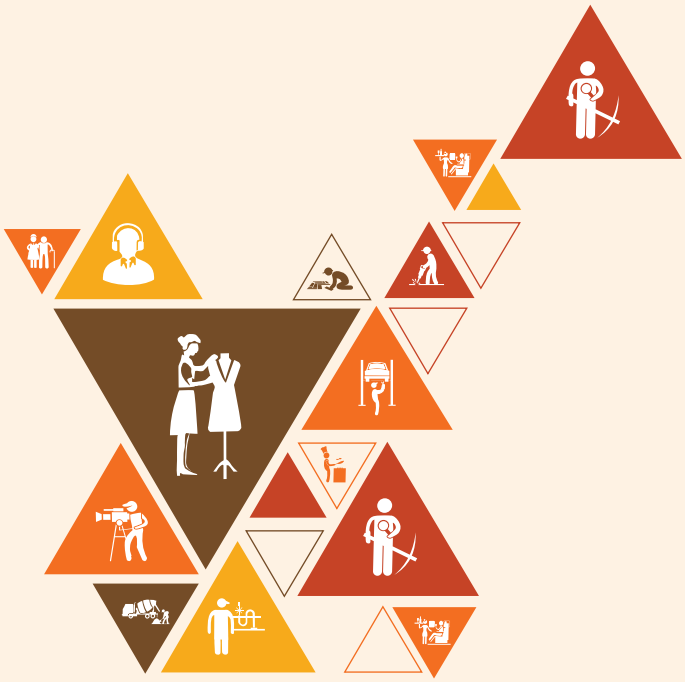
Construction Skill Development Council

5. Work According to Personal Health, Safety and Environment Protocol

Unit 5.1 - Workplace Hazards

Unit 5.2 - Fire Safety

Unit 5.3 - Safety Measures at Workplace



CON/N9001

Key Learning Outcomes

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

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

Unit 5.1: Workplace Hazards

Unit Objectives

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

1. Explain the types of hazards at the construction sites
2. Recall the safety control measures and actions to be taken under emergency situation.
3. Explain the reporting procedures adopted during emergency situations.
4. Describe the standard procedure for handling, storing and stacking of material, tools, equipment and accessories.
5. Explain the benefits of basic ergonomic principles used at construction sites
6. Demonstrate the use of all Personal Protective Equipment (PPE) like helmet, safety shoe, safety belt, safe jackets and other safety equipment relevant to bar bending 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 Scaffolding 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 Scaffolding 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 types of hazards at the construction sites?
- Why do you think it is important to use PPEs as per work requirements during construction jobs?

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:**
    - Introduction: Discuss workplace safety and PPE's significance.
    - Hazard Awareness: Identify construction site hazards.
    - Set up stations with examples of different types of PPE.
    - Divide the students into groups and assign each group to a station.
    - Instruct each group to inspect the PPE, discuss its purpose, and identify the types of hazards it protects against.
    - Allow students to try on the PPE to experience how it fits and functions.
    - Gather the students for a recap of the key points learned during the activity.
    - 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.

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 5.2: Fire Safety

Unit Objectives

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

1. Explain the classes of fire and types of fire extinguishers.
2. Demonstrate the operating procedure of the fire extinguishers.

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 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.

Notes

Unit 5.3: Safety Measures at Workplace

Unit Objectives

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

1. Explain the importance of housekeeping works.
2. Demonstrate safe housekeeping practices.
3. Explain the importance of participation of workers in safety drills.
4. Explain the purpose and importance of vertigo test at construction site.
5. List out basic medical tests required for working at construction site.
6. Demonstrate vertigo test.
7. Demonstrate different methods involved in providing First aid to the affected person
8. Demonstrate safe waste disposal practices followed at construction site.
9. 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:**
  - Divide participants into 5 groups and provide them with first aid kit essentials.
  - Ask them to surf the internet and explain the usage of each item included in the kit.
  - Alternatively show them a video about the usage and ask them to make notes.
  - 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

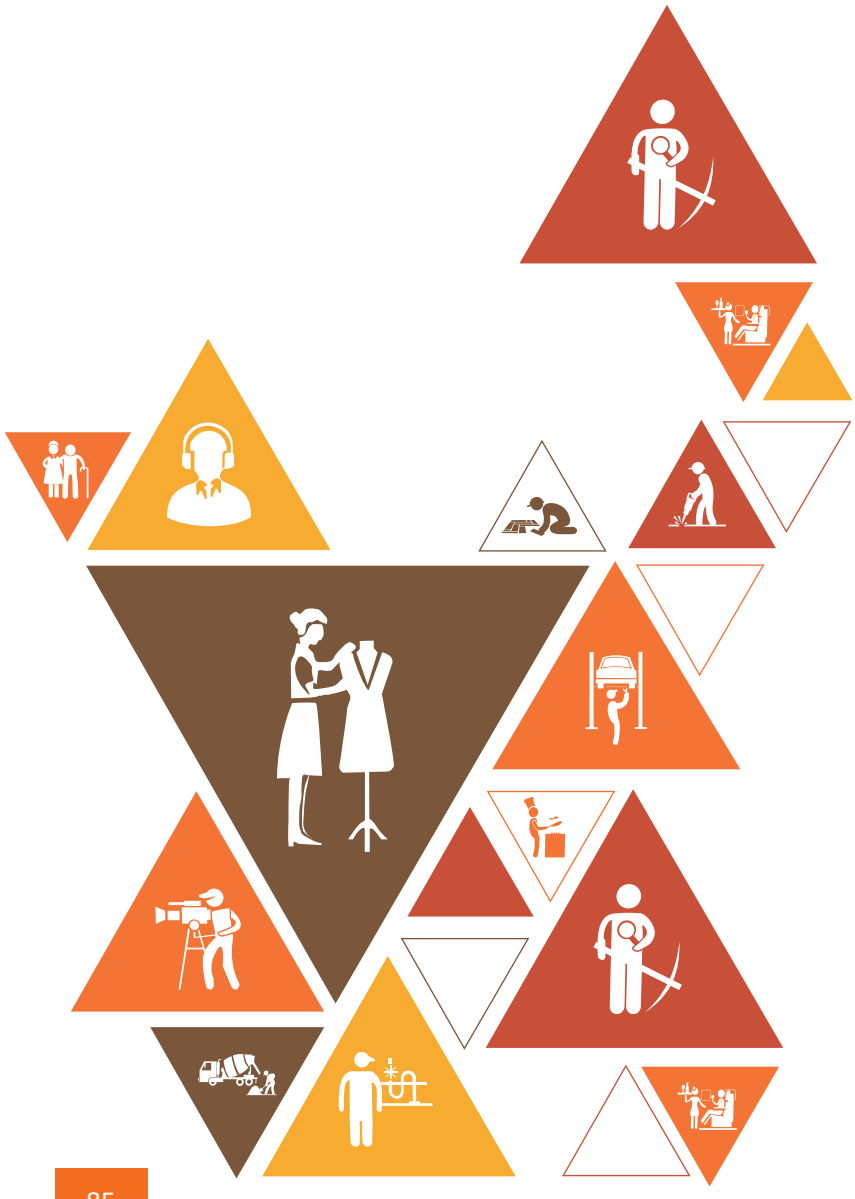
- Arrange the relevant handouts and leaflets for a better understanding of the topics
- Arrange audio-visual aids for a better understanding of the topics.
- Ask the participants if they have any questions.
- Encourage every participant to answer those questions and encourage peer learning in the class.

Exercise

Key Solutions to PHB 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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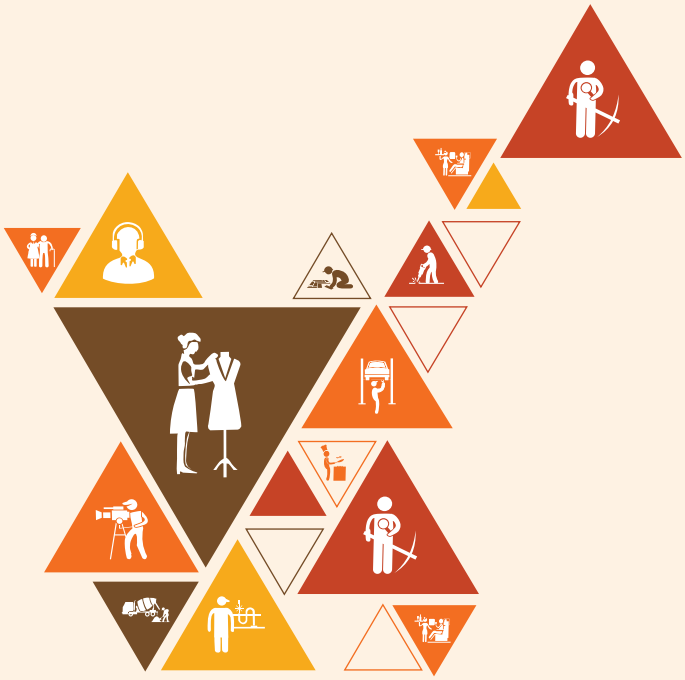
6. Employability Skills (30 Hours)

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

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

Scan the QR code below to access the ebook



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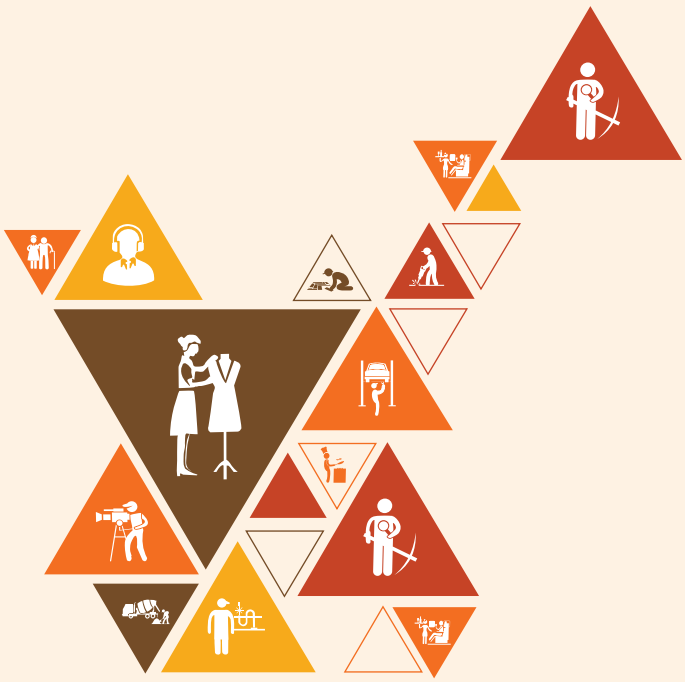
7. Annexures

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 Scaffolder - System**		
Qualification Pack Name & Ref. ID	CON/Q0314		
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 -Bar bender & steel fixer 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:** • Carry out preparatory works, erection and dismantling of pipe and coupler scaffold • Carry out preparatory works and erection and dismantling of various customized scaffolds • 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		Training tools/ aids	Dura-tion
1.		1. Icebreaker	• Introduce each other and build rapport with fellow trainees and the trainer • Recall the basic terms used in the occupation of Scaffolding	Bridge Module	Classroom lecture, games, group	Training Kit- Trainer Guide,	T- 00:30
		2. Roles and	• Define the role of an Assistant Scaffolder - System • Explain the personal attributes required to be an Assistant Scaffolder - System • Discuss future possible progression and career options for Assistant Scaffolder - System				T- 07:30
2.	Assist in the erection and dismantling of scaffold using pipe and coupler T- 32:00 P- 96:00 (HH: MM)	1. Pipes and Coupler	• Discuss standard procedure for erection and dismantle of pipe and coupler scaffold	CON/ N0354 PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC9, P10, PC11, PC12, PC13, PC14, PC15, PC16 KU1, KU2, KU3, KU4, KU5, KU6, KU7, KU8, KU9, KU10, KU11, KU12, KU13, KU14, KU15, KU16, KU17 KU18, KU19, KU20	Classroom Lecture, Group	Training Kit- Trainer Guide,	T- 02:00 P- 06:00
		2. Types of Couplers used in	• Explain the different types of pipes, swivel coupler, right angle coupler etc. based upon types of work.				T- 02:00 P- 06:00
		3. Types of Pipes used in	• Explain the different types of pipes, swivel coupler, right angle coupler etc. based upon types of work.				T- 02:00 P- 06:00
		4. Materials, Tools and	• List the various materials, tools and equipment used in pipe and coupler scaffolding • Explain the applications various materials, tools and equipment used in pipe and coupler scaffolding				T- 02:00 P- 06:00
		5. Selection criteria of tools and	• Explain common defects in pipes and couplers • Describe criteria for selection of pipes, swivel coupler, right angle coupler etc. based upon types of work				T- 02:00 P- 06:00
		6. Erection of Scaffold using Pipes and Couplers	• Describe the sequence and standard procedure for erection of scaffold using pipes and couplers				T- 02:00 P- 06:00
		7. Prepa-ratory Works for Scaffold Erection	• Demonstrate the preparatory works for scaffold erection including marking and transferring of levels				T- 02:00 P- 06:00
		8. Base	• Demonstrate preparation of base for pipe and coupler scaffolding work				T- 02:00 P- 06:00

		9. Providing Supports to Scaffold	• Describe importance of providing supports to scaffold				T- 02:00 P- 06:00
		10. Lifting and Shifting of Scaffold Materials	• Explain application of slings, shackles, and belts for lifting and shifting of scaffold materials				T- 02:00 P- 06:00
		11. Measuring, Marking and Levelling Tools	• Explain different measuring, marking and leveling tools for scaffold erection works				T- 02:00 P- 06:00
		12. Alignment Checks	• Demonstrate checks for alignment as per instruction				T- 02:00 P- 06:00
		13. Dismantling Pipe and Coupler Scaffold	• Demonstrate the dismantling of pipe and coupler scaffold in single and double staging				T- 02:00 P- 06:00
		14. Stacking and Storing Materials	• Explain the process of stacking and storing materials used in pipe and coupler scaffolding work				T- 02:00 P- 06:00
		15.	• Describe the measures taken for protection of work and work area				T- 02:00 P- 06:00
		16. Upkeep, repair and	• Summarize knowledge about upkeep, repair and maintenance of tools				T- 02:00 P- 06:00
3.	Assist in erection and dismantling of common customized system scaffold T- 40:00 P- 102:00 (HH: MM)	1. Customized scaffolds and its types	• Explain the different types of customized scaffold • List the customized scaffolds along with their standard sizes	CON/ N0355 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,	Classroom lecture, games, group	Training Kit- Trainer Guide,	T- 02:00 P- 06:00
		2. Application of Customized Scaffolds	• Explain the application of various types of customized scaffolds				T- 02:00 P- 06:00
		3. Stacking and Storing	• Define the process of stacking and storing of various materials based upon work requirements.				T- 02:00 P- 06:00
		4. Lifting and Shifting of Scaffold	• Demonstrate application of slings, shackles, and belts for lifting and shifting of scaffold materials				T- 02:00 P- 06:00
			• Use measuring, marking and levelling tools				T- 02:00 P- 06:00

		6. Common defects in	• Identify common defects in components of customised scaffold	KU12, KU13, KU14, KU15, KU16, KU17, KU18, KU19, KU20			T- 02:00 P- 06:00
		7. Selection criteria of	• Define the criteria for selection of components, tools and equipment etc. as per the types of work				T- 02:00 P- 06:00
		8. Base	• Explain process of preparation of base				T- 02:00 P- 06:00
		9. Protection of work area	• Describe the measures taken for protection of work and work area				T- 02:00 P- 06:00
		10. Preparatory Works for Customized Scaffold Erection	• Explain the standard procedure for erection of scaffold using in various customized scaffolds				T- 02:00 P- 06:00
		11. Erecting	• Explain the standard procedure for erection of scaffold using in various customized scaffolds				T- 02:00 P- 06:00
		12. Erecting Frame Scaffold	• Explain the standard procedure for erection of scaffold using in various customized scaffolds				T- 02:00 P- 06:00
		13. Erecting Tube-and-clamp scaffold	• Explain the standard procedure for erection of scaffold using in various customized scaffolds				T- 02:00 P- 05:00
		14. Providing Supports to Customized Scaffold	• Demonstrate the process of providing support in customized scaffolds				T- 02:00 P- 05:00
		15. Alignment Checks	• Demonstrate checks for alignment of scaffold as per instruction				T- 03:00 P- 05:00
		16. Dismantling Customized Scaffold	• Demonstrate the dismantling of customized scaffolds				T- 03:00 P- 05:00
		17. Upkeep, repair and	• Discuss the upkeep, repair and maintenance of tools				T- 03:00 P- 05:00
		18. Hazards involved in	• Describe the measures taken for protection of work and work area				T- 03:00 P- 05:00

4.	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 Scaffolding works with examples.	CON/ N8001 PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, KU1, KU2, KU3, KU4, KU5, KU6, KU7, KU8, KU9	Classroom lecture, games, group	Training Kit- Trainer Guide,	T- 02:00 P- 04:00
		2. Effective	• Explain importance of proper and effective communication and its adverse effects in case of failure of proper communication. • Demonstrate effective communication skills while interacting with co-workers and trade seniors during the assigned task.				T- 02:00 P- 04:00
		3. Team work and effective reporting	• Explain importance of team work and its effects relevant to Scaffolding 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 Scaffolding works.				T- 02:00 P- 04:00
		4. Construction drawings	• Interpret work sketches Scaffolding works formats, permits, protocols, checklists etc. • Interpret scope of Scaffolding works.				T- 02:00 P- 04:00
5.	Work according to personal health, safety and environment protocol at construction site T- 16:00 P- 32:00 (HH: MM)	1. Workplace hazards	• Explain the types of hazards at the construction sites and identify the hazards specific to the domain related works. • Describe the standard procedure for handling, storing and stacking of material, tools, equipment and accessories.	CON/ N9001 PC1, PC2, PC3, PC4, PC5, PC6, PC7, PC8, PC9, PC10, PC11, PC12, PC13, PC14, KU1, KU2, KU3, KU4, KU5, KU6, KU7, KU8, KU9, KU10, KU11, KU12, KU14	Classroom lecture, games, group	Training Kit- Trainer Guide,	T- 03:00 P- 05:00

		2. Use of PPEs and emergency situation	• Use PPEs as per work requirements during Scaffolding 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 practices. • Explain the importance of participation of workers in safety drills. • Explain the purpose and importance of vertigo test at construction site.				T- 02:00 P- 06:00
		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- 02:00 P- 06:00

6.		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,	Training Kit- Trainer Guide,	01:00
		2.	• Detail the principles of the Constitution of India • Identify the various environmentally sustainable practices				01:00
		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. Communi-cation 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.	• 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.	• Practice personal grooming strategies • Illustrate the use of 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				02:00

Annexure II

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 Scaffolder - System	
Job Role	Assistant Scaffolder - System
Qualification Pack	CON/Q0314
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/N0354: Assist in erection and dismantling of scaffold using pipe and coupler	30	70	-	-	100	35
CON/N0355: Assist in erection and dismantling of common customized system scaffold	30	70	-	-	100	35
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	140	310	-	-	450	100

Annexure-III

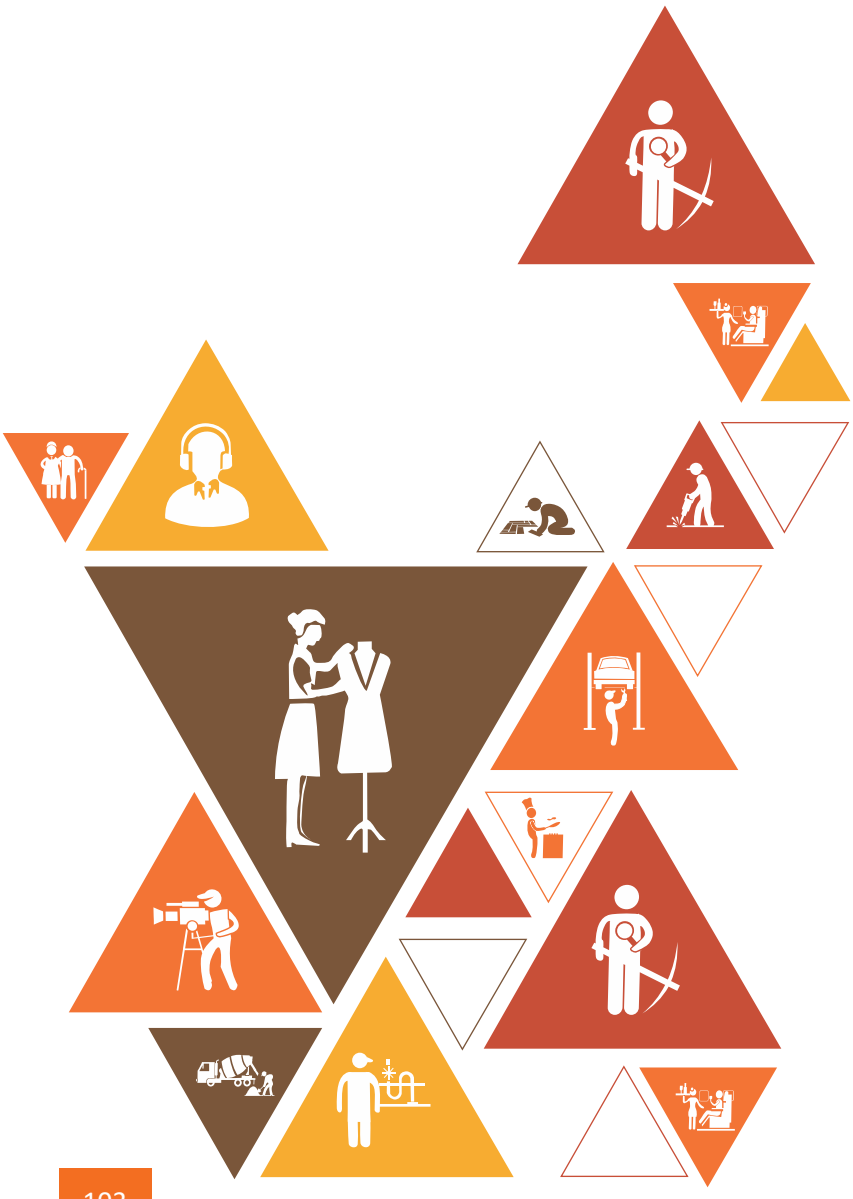
Annexure of QR Codes for **Assistant Scaffolder – System**

Chapter Name	Unit Name	Topic Name	URL	QR Code
Chapter 1: Introduction to Bar Bending and Steel Fixing Occupation	Unit 1.1: Introduction to Bar Bending and Steel Fixing	Construction Industry	https://youtu.be/nndLyZrGfWc	Construction Industry
		Types of Construction	https://youtu.be/1WVzo2UFyo8	Types of Construction
	Unit 1.2: Role and Responsibilities of an Assistant Scaffolder – System	Assistant Scaffolder – System	https://youtu.be/H1qFaFQPZ-0	**Assistant Scaffolder – System**
Chapter 2: Interpret Reinforcement Bar Detail from Hand Sketches	Unit 2.1: Interpret Reinforcement Hand Sketches	Reinforcement bar	https://youtu.be/Zecb8Wj5QHE	Reinforcement bar
		Rebar Grades	https://youtu.be/debu3vUkF8E	Rebar Grades
		Rebar Sizes	https://youtu.be/H1j_Fb3OAJc	Rebar Sizes

Chapter Name	Unit Name	Topic Name	URL	QR Code
		Rebar Sketch	https://youtu.be/4Ep9DU-g1zk	Rebar Sketch
		Symbols in Rebar Sketch		Symbols in Rebar Sketch
		Bar Bending Schedule	https://youtu.be/nGoTdkCxsuk	Bar Bending Schedule
Chapter 3: Tools and Equipment relevant to Reinforcement Works	Unit 3.1: Reinforcement Tools and Equipment	Rebar Installation	https://youtu.be/-Tp2mY4Gj0c	Rebar Installation
		Cutting Rebar	https://youtu.be/WnoqEfio9G8	Cutting Rebar
		Bending Rebar	https://youtu.be/4c43B9S3CPo	Bending Rebar
		Lifting Gears and Equipment	https://youtu.be/H2J9uuLy1hg	Lifting Gears and Equipment

Chapter Name	Unit Name	Topic Name	URL	QR Code
Chapter 4 : Cutting and Bending of Rebar for Simple Shapesp	Unit 4.1: Cutting and Bending of Rebar	Cutting and Bending of Rebar	https://youtu.be/F1iVGU_1qD8	Cutting and Bending of Rebar
		Rebar	https://youtu.be/FTRENf1ptk0	Rebar
Chapter 5: Fabrication, Placing and Fixing of Rebar	Unit 5.1: Fabrication, Placing and Fixing of Rebar	Pre-fabricated Cages	https://youtu.be/yUlPEryelMA	Pre-fabricated Cage
		Fabrication, Placing and Fixing	https://youtu.be/0mNUSewKGUk	Fabrication, Placing and Fixing
		Fixing of Structural Elements	https://youtu.be/ZHVXWxEFqWI	Fixing of Structural Elements

Chapter Name	Unit Name	Topic Name	URL	QR Code
Chapter 6: Erect and Dismantle Temporary Scaffold	Unit 6.1: Erect and dismantle a scaffold	Scaffolding	https://youtu.be/96shGh3rfXw	Scaffolding
		Uses of Scaffold	https://youtu.be/5Vj-MosphpY	Uses of Scaffold
		Scaffolding Erection and Dismantle	https://youtu.be/OKawvyUhUkA	Scaffolding Erection and Dismantle
		Safety Checks	https://youtu.be/AoDWOZE8Wb4	Safety Checks



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Construction Skill Development Council

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Price: ₹