

## DRAINAGE SYSTEMS INSTALLATION

**UNIT CODE:** CON/CU/PL/CR/03/5/A

### Relationship to Occupational Standards

This unit addresses the Unit of Competency: Install Drainage systems

**Duration of Unit:** 150 hours

### Unit Description

This unit specifies the competencies required to install drainage systems. It involves preparing working drawings, quantifying and cost drainage materials, using drainage tools and equipment setting out drainage systems, install above ground drainage system identifying drainage materials and installing below ground drainage system and testing. It applies in the construction industry.

### Summary of Learning Outcomes

1. Prepare working drawings
2. Quantify drainage materials
3. Use drainage tools and equipment
4. Setting out drainage systems
5. Install above ground drainage system
6. Install below ground drainage system

### Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Prepare working drawing	<ul style="list-style-type: none"><li>• Terms and Concepts</li><li>• Symbols</li><li>• Scales</li><li>• Measurements</li><li>• Reference points</li><li>• Types of drawings<ul style="list-style-type: none"><li>✓ Details and sections</li><li>✓ Pictorial</li><li>✓ Line drawings</li><li>✓ Freehand sketching</li><li>✓ Isometric drawings</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Observation</li><li>• Oral questioning</li><li>• Third party report</li><li>• Interviewing</li><li>• Written tests</li></ul>

<p>2. Quantify and cost drainage materials</p>	<ul style="list-style-type: none"> <li>• Terms and concepts</li> <li>• Drainage materials and supplies</li> <li>• Material and supplies schedule</li> <li>• Estimation and cost of quantities</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Written tests</li> <li>• Oral questioning</li> <li>• Interviewing</li> <li>• Third party report</li> </ul>
<p>3. Use drainage tools and equipment</p>	<ul style="list-style-type: none"> <li>• Terms and concepts</li> <li>• PPEs and their application</li> <li>• Use of drainage tools and equipment</li> <li>• Safety, care and maintenance of drainage tools and equipment</li> <li>• Storage of drainage tools and equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Written tests</li> <li>• Oral questioning</li> <li>• Interviewing</li> <li>• Third party report</li> </ul>
<p>4. Set out drainage systems</p>	<ul style="list-style-type: none"> <li>• Terms and concepts</li> <li>• Levelling</li> <li>• Boning rods</li> <li>• Hose pipe</li> <li>• Dumpy level</li> <li>• Drainage bends</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Written tests</li> <li>• Oral questioning</li> <li>• Interviewing</li> <li>• Third party report</li> </ul>
<p>5. Install above ground drainage system</p>	<ul style="list-style-type: none"> <li>• Terms and concepts</li> <li>• Installation procedure</li> <li>• Types of pipes</li> <li>• Pipe sizes</li> <li>• Types of fittings</li> <li>• Types of appliances</li> <li>• Types of traps</li> <li>• Types of piping systems</li> <li>• Functionality test.</li> <li>• Soundness test</li> <li>• Fault checks</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Written tests</li> <li>• Oral questioning</li> <li>• Interviewing</li> <li>• Third party report</li> </ul>
<p>6. Install below ground drainage system</p>	<ul style="list-style-type: none"> <li>• Terms and concepts</li> <li>• Trench excavation</li> <li>• Pipe sizes and pipe laying</li> <li>• Construction of inspection chambers, manholes and traps</li> <li>• Haunching</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Written tests</li> <li>• Oral questioning</li> <li>• Interviewing</li> <li>• Third party report</li> </ul>

	<ul style="list-style-type: none"> <li>● Types of drainage systems</li> <li>● Private and public sewer</li> <li>● Functionality test.</li> <li>● Soundness test</li> <li>● Fault checks</li> <li>● Occupational safety and legal requirements</li> </ul>	
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### **Suggested methods of instructions**

- Discussions
- Demonstration
- visiting Lecturer/Expert
- Industrial Visits

### **Recommended Resources**

#### **Functional Workshop with the following:**

##### **Tools and Equipment**

- Measuring tools
- Levelling equipment's
- Mason trowels
- Mason square
- Spirit level
- Hose Pipe
- Boning rods
- Floats
- Mallet
- Ball hammer
- Masonry chisel

##### **Supplies and Materials**

- Various types and sizes of fittings
- Caulking tools
- Various types of pipe support
- Clay pipes
- UPVC
- Cast iron
- Concrete

