

## INSTALL WATER STORAGE SYSTEMS AND AUXILIARY FITTINGS

**UNIT CODE:** CON/OS/PL/CR/05/5/A

### UNIT DESCRIPTION

This unit specifies the competencies required to install water storage systems and auxiliary fittings. It involves preparing working drawings, quantifying and costing materials, installing storage systems and auxiliary fittings, and testing and commissioning auxiliary fittings. It applies in the construction industry.

### ELEMENTS AND PERFORMANCE CRITERIA

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
These describe the <b>key outcomes</b> which make up <b>workplace function</b> .	These are <b>assessable</b> statements which specify the required level of performance for each of the elements.  <i>Bold and italicized terms are elaborated in the Range</i>
1. Prepare water storage drawings	1.1 Drawings are identified and selected based on the job.

	<p>1.2 Scale of the drawing is determined based on the specifications.</p> <p>1.3 Measurements are converted based on scale.</p> <p>1.4 Symbols are identified based on best standard practices.</p> <p>1.5 Simple working drawings are Prepared based on specifications</p> <p>1.6 Isometric working drawings are drawn based on best practices.</p>
2. Quantify and cost materials	<p>2.1 Materials required for installing storage and <b>auxiliary fittings</b> are identified based on requirements of the job.</p> <p>2.2 <b>Supplies</b> required for installation of storage and auxiliary fittings are identified based on requirements of the job.</p> <p>2.3 <b>Types of storage</b> and <b>types of pumps</b> required are enumerated based on the drawing.</p> <p>2.4 Materials and supplies required are measured and counted based on working drawings and specifications</p> <p>2.5 schedules of storage and pumps are prepared based on working drawings</p>
3. Install storage systems and auxiliary fittings	<p>3.1 <b>Tools and equipment</b> needed for fixing storage and ancillary fittings are identified based on the job requirements.</p> <p>3.2 Tools and equipment are used based manufacturer's manuals.</p> <p>3.3 <b>Location</b> of Storage and auxiliary fitting is determined based on drawings.</p> <p>3.4 <b>Support</b> for Storage and auxiliary fitting are put in place based manufacturers' manual.</p> <p>3.5 Storage and ancillary fittings are mounted based job requirements and manufacturer's installation manual.</p> <p>3.6 Personal Protective Equipment is used in line with occupational safety and health regulations.</p> <p>3.7 Housekeeping is conducted on work area based on work place procedure</p> <p>3.8 Safety and health practices are observed based on OSHA.</p>

<p>4. Test and commission storage and auxiliary Fittings</p>	<p>4.1 Functionality of the Storage and auxiliary fittings are tested based on manufacturer’s manual and requirements.</p> <p>4.2 <b>Faults</b> in Storage and auxiliary fittings are corrected based on best practice.</p> <p>4.3 Commission the storage system as per the client’s/ contract requirements.</p>
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### RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variables	Range
<p>1. Auxiliary fittings may include but not limited to:</p>	<ul style="list-style-type: none"> <li>• Various type of Valves</li> <li>• Various types of pumps</li> <li>• Various types of taps</li> <li>• Strainers</li> <li>• Solar collectors</li> <li>• Flanges</li> <li>• Washing machines connections</li> <li>• Water purifiers</li> </ul>

	<ul style="list-style-type: none"> <li>• Pump controllers</li> </ul>
2. Tools and equipment may include but not limited to:	<ul style="list-style-type: none"> <li>• Pipe wrench</li> <li>• Pipe cutter</li> <li>• Hacksaw</li> <li>• Pipe Threading Equipment</li> <li>• Vice - Bench</li> <li>• Tap and Punch</li> <li>• Files</li> <li>• Screwdrivers</li> <li>• Drill with various sizes of bits</li> <li>• Mallet</li> <li>• Ball hammer</li> <li>• Masonry chisel</li> <li>• PPR machine / Heat Fusion equipment</li> <li>• Pipe bender</li> <li>• Sealant gun</li> <li>• Water pump pliers</li> </ul>
3. Supplies may include but not limited to:	<ul style="list-style-type: none"> <li>• Fittings</li> <li>• Gaskets and O-rings</li> <li>• Caulking agents</li> <li>• Sealant and glue</li> <li>• Water proofing agents</li> </ul>
4. Type of storage may include but not limited to:	<ul style="list-style-type: none"> <li>• Plastic tanks (PE)</li> <li>• Steel tanks</li> <li>• Concrete tanks</li> <li>• Masonry tanks</li> <li>• Rubber tanks</li> <li>• Aluminium Alloy</li> <li>• Fibre Reinforced Plastics (FRP)</li> <li>• Insulated tanks</li> <li>• Septic tank systems</li> </ul>

5. Types of Pumps may include but not limited to:	<ul style="list-style-type: none"> <li>• Sump pumps</li> <li>• Submersible pumps</li> <li>• Centrifugal pumps</li> <li>• Booster pumps</li> <li>• Various types of controllers</li> <li>• Reciprocating pump</li> </ul>
6. Location may include but not limited to:	<ul style="list-style-type: none"> <li>• Underground</li> <li>• on-ground</li> <li>• above ground (elevated)</li> </ul>
7. Support may include but not limited to:	<ul style="list-style-type: none"> <li>• Steel Pipes</li> <li>• Concrete</li> <li>• Timber</li> <li>• Masonry</li> <li>• Compact Earth</li> </ul>
8. Faults may include but not limited to:	<ul style="list-style-type: none"> <li>• Low and high pressure</li> <li>• Air locks</li> <li>• Leaks</li> <li>• Clogged system</li> <li>• Control valve problems</li> <li>• Pump faults</li> </ul>

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

### Required Skills

The individual needs to demonstrate the following skills:

- Drawing and interpretation skills
- Problem-solving skills
- Critical thinking skills
- Communication skills
- Interpersonal relationship skills
- Organizing skills
- Measuring skills

- Numeracy skills
- Cutting skills
- Threading skills
- Bending skills

### Required Knowledge

The individual needs to demonstrate knowledge of:

- Drawing and drawing interpretation
- Mensuration
- Basic fluid mechanics
- Storage systems
- Pumping systems
- Support system for elevated storage
- Plumbing ancillary systems
- Solar water heating systems
- Septic storage systems

### EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Prepared working drawings correctly</p> <p>1.2 Read scale of the drawing accurately</p> <p>1.3 converted measurements correctly</p> <p>1.4 Identified symbols correctly</p> <p>1.5 Prepared Simple working drawings accurately</p> <p>1.6 Drew isometric working drawings accurately</p> <p>1.7 Identified materials required for installing storage and auxiliary fittings correctly.</p> <p>1.8 Identified supplies required for installation of storage and auxiliary fittings correctly</p> <p>1.9 Enumerated types of storage and types of pumps accurately.</p> <p>1.10 Quantified materials and supplies required correctly</p> <p>1.11 Costed materials and supplies accurately</p> <p>1.12 prepared schedules of storage and pumps correctly</p> <p>1.13 Identified tools and equipment needed for fixing storage and ancillary fittings appropriately</p>
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	<p>1.14 Used tools and equipment accurately</p> <p>1.15 Determined positioning of Storage and ancillary fitting correctly.</p> <p>1.16 Placed support for Storage and auxiliary fitting correctly.</p> <p>1.17 Mounted storage and auxiliary fitting accurately.</p> <p>1.18 used personal Protective Equipment correctly</p> <p>1.19 Conducted Housekeeping correctly</p> <p>1.20 Observed safety and health practices correctly</p>
2. Resource implications	<p>The following resources must be provided:</p> <p>2.1 A functional workshop with basic tools, equipment and sanitary appliances.</p> <p>2.2 Reference and appliance manuals</p> <p>2.3 Personal protective equipment</p>
3. Methods of Assessment	<p>Competency may be assessed through:</p> <p>3.1 Practical Test</p> <p>3.2 Written test</p> <p>3.3 Third party report</p> <p>3.4 Portfolio</p>
4. Context of Assessment	<p>4.1 On-the-job</p> <p>4.2 Off-the-job</p> <p>4.3 Work placement</p>
5. Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended</p>