

INSTALL STORAGE AND PUMPING SYSTEMS

UNIT CODE: CON/OS/PL/CR/03/3/A

Unit Description

This unit specifies the competencies required to install storage and pumping systems. It involves interpretation of drawings quantifying storage and ancillary appliance, and testing and commissioning storage and ancillary appliances, it applies in the construction industry

ELEMENTS AND PERFORMANCE CRITERIA

Element These describe the key outcomes which make up workplace function	Performance Criteria These are assessable 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. Interpret working drawing	1.1 Working drawings are differentiated based on international technical drawings (ISO 128). 1.2 Imperial measurements are converted into metric measurements based on conversion table. 1.3 Symbols are identified and interpreted based on international technical drawings (ISO 128). 1.4 Storage and ancillary appliance position is identified based on working drawings.
2. Interpret water storage appliances manufacturers drawings	2.1 Water storage appliances manufacturers' drawing is interpreted as presented. 2.2 Pipe work installation to water storage appliances are done as per manufacturers 'instructions.
3. Interpret pumps manufacturers drawing	3.1 Water pump manufacturers' drawing is interpreted as presented. 3.2 Pipe work installation to pump is done as per manufacturer's instructions.
4. Quantify storage and ancillary appliances supplies and materials required	4.1 <i>Materials</i> required for installing storage and <i>ancillary appliances</i> are identified based on requirements of the job. 4.2 <i>Supplies</i> required for installation of storage and ancillary

	<p>4.3 appliances are identified based on requirements of the job.</p> <p>4.4 Quantity and <i>types of storage</i> and <i>types of pumps</i> required are enumerated based on the drawing.</p>
5. Install storage systems and ancillary appliances	<p>5.1 Tools and equipment needed for fixing storage and ancillary appliances are selected based on the job requirements.</p> <p>5.2 Tools and equipment are used based manufacturer's instructions</p> <p>5.3 Storage and ancillary appliances positioning are determined based on drawings.</p> <p>5.4 Support for Storage and ancillary appliances are put in place-based manufacturers' instructions</p> <p>5.5 Storage and ancillary appliances are mounted based on job requirements and manufacturer's installation manual.</p> <p>5.6 Personal Protective Equipment is used in line with occupational safety and health regulations</p>
6. Test and commission storage and Ancillary appliances	<p>6.1 Functionality of the Storage and ancillary appliances are tested based on manufacturer's manual and requirements.</p> <p>6.2 Faults in Storage and ancillary appliances functionality and leakage is corrected based on workplace policy.</p> <p>6.3 Commission the storage and pumping system as per the clients/ contract requirements.</p>

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
1. Materials may include but not limited to:	<ul style="list-style-type: none"> • Pipes • Various type of Valves • Fittings • Various types of tanks

	<ul style="list-style-type: none"> • Various types of pumps
2. Tools and Equipment may include but not limited to:	<ul style="list-style-type: none"> • Pipe wrench • Pipe cutter • Hacksaw • Pipe threading equipment • Vise - Bench • Tap and Punch • Files • Screwdrivers • Drill with various sizes of bits • Mallet • Ball hammer • Masonry chisel • PPR machine / Heat Fusion equipment • Pipe bender • Sealant gun
3. Ancillary Appliances may include but not limited to:	<ul style="list-style-type: none"> • Float valves • Control valves • Pressure relief valves • Non-return valves • Foot valves • Strainers • Various pumps and controllers • Solar storage / tanks and collectors • Flanges
4. Supplies may include but not limited to:	<ul style="list-style-type: none"> • Fittings • Gaskets and O-rings • Caulking agents • Sealant and glue • Water proofing agents
5. Storage type may include but not limited to	<ul style="list-style-type: none"> • Plastic tanks (PE) • Steel tanks • Concrete tanks • Masonry tanks • Rubber tanks

	<ul style="list-style-type: none"> • Aluminum Alloy • Fiber Reinforced Plastics (FRP) • Insulated tanks • Septic tank systems
6. Pumps types may include but not limited:	<ul style="list-style-type: none"> • Sump pumps • Submersible pumps • Centrifugal pumps • Booster pumps • Various types of controllers
7. Ancillary appliances may include but not limited to:	<ul style="list-style-type: none"> • Solar water heaters • Pumps and controllers • Safety valves • Sump tanks • Instant water heaters • Washing machines • connections) • Water purifiers
8. Positioning may include but not limited to	<ul style="list-style-type: none"> • Underground • On-ground • Above ground (elevated)
9. Support may include but not limited to:	<ul style="list-style-type: none"> • Steel • Steel Pipes • Concrete • Timber • Masonry • Compact earth
10. Faults may include but not limited to:	<ul style="list-style-type: none"> • Low and high pressure • Air locks • Leaks • Clogged system • Control valve problems • Pump faults

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
- Fusion 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.

1. 1. Critical aspects of competency	Assessment requires evidence that the Candidate: 1.1 Interpreted working drawing correctly. 1.2 Quantified storage and ancillary appliances supplies and materials required accurately. 1.3 Installed storage systems and ancillary appliances according to work requirements properly. 1.4 Tested storage and ancillary appliances to functionality according to manuals
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2. Resource Implications	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> 2.1 A functional workshop with basic tools, equipment and sanitary appliances. 2.2 Reference and appliance manuals 2.3 Personal protective equipment
3. Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Observation. 3.2 Written test 3.3 Interview 3.4 Oral questioning 3.5 Project
4. Context of Assessment	<p>Assessment may be done:</p> <ul style="list-style-type: none"> 4.1 On-the –job 4.2 Off-the –job 4.3 During work placement
5. Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector workplace and job role is recommended</p>