DESIGN ONSITE SANITATION FACILITIES

UNIT CODE: CON/OS/CET/CR/11/6/A

UNIT DESCRIPTION

This unit covers the competencies required to design onsite sanitation facilities**.** It involves Collection and analysis of onsite sanitation design data, calculation of onsite sanitation design parameters, drawing onsite sanitation units, designing shit flow diagram and compilation of onsite sanitation design report

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. ***Bold and italicized terms are elaborated in the Range***
1. Collect onsite sanitation design data	1.1 Area to be served is mapped out based on job requirements/specification. 1.2 ***Tools for data collection*** are prepared based on ***onsite sanitation facility*** to be designed. 1.3 Data and information is collected based on tools prepared.
2. Analyse onsite sanitation design data	2.1 Data and information is arranged based on onsite sanitation facility to be designed. 2.2 Data is presented based on onsite sanitation facility to be designed.
3. Calculate onsite sanitation design parameters	3.1 ***Design parameters*** to be calculated are identified based on wastewater design manual. 3.2 ***Tools for design parameter calculation*** are identified based on the parameter to be calculated. 3.3 Various onsite sanitation facility design parameters are calculated based on design codes.
4. Draw onsite sanitation units	4.1 ***Drawing tools, supplies and materials*** are identified and gathered based on available resources and complexity of the design. 4.2 Onsite sanitation facilities are drawn based on the design parameters. 4.3 Onsite sanitation facility drawings are submitted for approval as per legal requirements
5. Design shit flow diagram	5.1 Data required for SFD preparation is identified according to standards 5.2 Methodology for data collection is identified as per the standards

	5.3 Tools, supplies and materials are identified and gathered based on available resources 5.4 Data is collected, sorted and analysed based on methodology identified 5.5 SFD is prepared based on the data collected.
6. Compile onsite sanitation design report	6.1 Design report format is obtained from the wastewater design manual. 6.2 Design report is prepared based on identified format. 6.3 Design report is submitted to the client as per best practice.

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. Tools for onsite data collections may include but not limited to:	• Questionnaires • Stationery • GPS • Cameras • Check list • Sampling equipment • Maps • Measuring instruments • Safety equipment • Safety box • First aid kits
2. onsite sanitation facility to be design may include but not limited to:	• Septic Tanks • Bio-Digesters • Anaerobic Baffled Reactors • Latrines • Soak Pits • Ecosan toilets • Imhoff tank
3. Tools for design parameter calculation may include but not limited to:	• Laptops • Calculator • Stationery • Software

4. Drawing tools, supplies and materials for onsite sanitation facilities may include but not limited to:	• Software • Pencils • Ruler • T-square • Scale rule • Eraser • Set square • Drawing board • Masking tapes • Software • Drawing paper • Photocopying /printing papers • Stationery • Computer • Printer • Photocopiers • Calculator

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:

Generic skills:

- Communication
- Analytical
- Organizing
- Decision making
- Planning
- Record keeping
- Problem solving
- First aid
- Supervising
- Organizing
- Time management

Technical skills:

- Analysis

- Reporting
- Performance appraising
- Trouble shooting
- Data logging
- Technical specifications
- Safety measures
- Statutory regulations
- Surveying skills
- Drawing skills

Required Knowledge

The individual needs to demonstrate knowledge of:

- Technical specifications
- Statutory regulations
- Quality Assurance
- Computer Aided design
- Occupational health, safety
- Statistics
- Wastewater treatment processes
- Soil analysis methods
- Surveying
- Statutory regulations and legislation in water
- Engineering mathematics
- Technical drawing
- Onsite sanitation facilities
- Waste water characteristics

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Mapped out the area to be served based on job requirements/specification. 1.2 Prepared tools for data collection based on onsite sanitation facility to be designed. 1.3 Collected data and information based on tools prepared. 1.4 Arranged data and information based on onsite sanitation facility to be designed.

	1.5 Presented data based on onsite sanitation facility to be designed. 1.6 Identified design **p**arameters to be calculated based on wastewater design manual. 1.7 Identified tools for parameter calculation based on the parameter to be calculated. 1.8 Calculated various onsite sanitation facility design parameters based on design codes. 1.9 Identified drawing tools, supplies and materials and gathered based on available resources and complexity of the design. 1.10 Drawn Onsite sanitation facilities based on the design parameters. 1.11 Submitted on-site sanitation facility drawings for approval as per legal requirements 1.12 Obtained design report format from the wastewater design manual. 1.13 Prepared design report based on identified format. 1.14 Submitted design report to the client as per best practice.
2. Resource Implications	2.1 Surveying equipment 2.2 Drawing room 2.3 Human resource 2.4 Computer lab 2.5 Design software
3. Methods of Assessment	3.1 Verbal assessment 3.2 Written assessment 3.3 Observation 3.4 Presentation
4. Context of Assessment	Assessment may be done: 4.1 Project 4.2 On the job 4.3 Off-the job 4.4 Industrial attachment 4.5 Course work
5. Guidance information for assessment	Holistic assessment with other units relevant to the building sector workplace and job role is recommended.