

EXECUTE BUILDING SUBSTRUCTURE WORKS

UNIT CODE: CON/OS/BUT /CR/02/5/A

UNIT DESCRIPTION:

This Unit describes the competencies required to execute substructure works. It involves excavating, leveling and concreting foundation trenches, constructing foundation wall and solid ground floor.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace functions	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. Excavate Foundation trenches	1.1 Type of soil is determined according to standard soil testing procedures. 1.2 Depth of excavation is determined as per the structural engineer's specification. 1.3 Excavation method is determined according to soil type and scope of the excavation. 1.4 Excavation plant, tools and equipment are identified and assembled according to the works requirement. 1.5 Foundation trench is excavated as per the working drawings. 1.6 Barriers are erected next to the excavation as per safety measures
2. Level foundation trenches	2.1 Levelling operation is carried out according to specification. 2.2 Planking and strutting is identified as per soil analysis report. 2.3 Materials for planking and strutting are selected as per the site conditions. 2.4 Planking and strutting is erected as per the site conditions. 2.5 Inspection is done regularly according to safety standards. 2.6 Dewatering is done depending on the site conditions.
3. Concrete foundation trenches	3.1 Blinding is laid as per the engineer's specification. 3.2 Reinforcement bars sizes are selected and laid as per the structural drawing. 3.3 Spacer blocks are fixed as per the specifications. 3.4 Reinforcement is inspected to structural engineer's approval. 3.5 Formwork is fixed, aligned, plumbness and tightness is checked as per construction regulations. 3.6 Concrete mixing materials are selected as per specifications. 3.7 Concrete mixing tools and equipment are selected as per the work requirement. 3.8 Prepare the concrete as per the design requirements. 3.9 Concrete placing method is selected depending on specifications and site conditions. 3.10 Concrete is laid and samples are picked for testing as per construction regulations

	3.11 Concrete is cured as per engineer's specifications
4. Construct foundation wall	4.1 Foundation walls are laid as per the working drawing. 4.2 Foundation wall is constructed as per the building specifications. 4.3 Service pipes are fixed as per the specifications. 4.4 Foundation walls are cured per engineer's specifications. 4.5 Backfilling material is selected and done as per construction regulations.
5. Construct solid ground floor	5.1 Floor base is levelled and compacted according to building code requirement. 5.2 Hard-core is laid and compacted as per the specification. 5.3 Blinding layer is laid and compacted as per specifications. 5.4 Service receptors are installed as per building regulations. 5.5 Ground floor anti-termite treatment is conducted depending on site conditions. 5.6 Damp proofing material is laid as per building code 5.7 BRC is laid as per building code. 5.8 Spacer blocks are positioned as per specifications 5.9 Formwork to edges is erected as per building regulations and specifications. 5.10 Concrete is placed and compacted as per the specifications 5.11 Floor slab is cured as per the construction regulations and edge formwork is struck off.

RANGE

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

Variable	Range
1. Type of soil may include but not limited to:	<ul style="list-style-type: none"> • Firm soil • Dry loose soil • Wet loose soil • Hard soil
2. Excavation plant, tools and equipment may include but not limited to:	<ul style="list-style-type: none"> • excavator • Trencher • Front end shovel • Back actor • Mattock
3. Foundation may include but not limited to:	<ul style="list-style-type: none"> • Strip foundation • Pad foundation • stepped foundation • Raft/ mat foundation • Pile foundation

4. Planking and strutting may include but not limited to:	<ul style="list-style-type: none"> • Poling boards • Struts • Walling board • Wedge
5. Dewatering may include but not limited to:	<ul style="list-style-type: none"> • Perimeter trench • Well points • Osmosis • Freezing
6. Concrete mixing materials may include but not limited to:	<ul style="list-style-type: none"> • Binders • Fine aggregates • coarse aggregates • Additives and admixtures
7. Concrete mixing tools and equipment may include but not limited to:	<ul style="list-style-type: none"> • Spade • Wheel barrows • Trowels • Buckets • Mixer
8. Concrete placing method may include but not limited to:	<ul style="list-style-type: none"> • Mechanical • Manual
9. Damp proofing material may include but not limited to:	<ul style="list-style-type: none"> • DPM • DPC • Bituminous felt • Asphalts • Sheet metal • Stone slate

REQUIRED KNOWLEDGE AND SKILLS

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

- Occupational Health and Safety
- Technical Drawing
- Building Drawing
- Mensuration
- Construction plants and equipment
- Construction materials
- General Building Construction
- Surveying/levelling
- Masonry
- Concrete technology
- Methods of setting out
- Types of foundations
- Concreting
- Bar bending and fixing

Required skills:

- Communication skills
- Problem solving skills
- Digital literacy skills
- Analytical skills
- Numeracy skills

EVIDENCE GUIDE

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

1. Critical aspects of competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Determined type of soil according to standard soil testing procedures. 1.2 Excavated foundation trench as per engineer’s specifications. 1.3 Erected safety barriers next to the excavation as per building regulations 1.4 Erected planking and strutting as per site conditions. 1.5 Constructed and cured foundation walls as per standard building procedures. 1.6 Constructed and cured solid ground floor as per standard building procedures
2. Resource implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Access to relevant workplace where assessment can take place. 2.2 Appropriately simulated environment where assessment can take place. 2.3 Resources relevant to proposed activity or task.
3. Methods of assessment	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Practical assignment 3.2 Written 3.3 Oral interview 3.4 Demonstrations 3.5 Observation
4. Context of assessment	<p>Competency may be assessed:</p> <ul style="list-style-type: none"> 4.1 On-the-job 4.2 In a simulated workplace setting
5. Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.</p>