# DCSBCD617: Produce Basic Concrete Drawings

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| **UNIT CODE** | | **DCSBCD617** | |
| **UNIT TITLE** | | **Produce basic concrete drawings** | |
| **APPLICATION** | | This unit describes the performance outcomes, skills and knowledge required to produce reinforced concrete design drawings of structural concrete elements in a structure.<br>The unit of competency is applied by drafting personnel in a civil and structural engineering environment operating as part of an engineering design team.<br>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication. | |
| **PREREQUISITE UNIT(S)** | | ▪ DCSBCE602 Use basic CAD in engineering<br>▪ DCSGRE603 Use graphics in engineering | |
| **ELEMENTS** | | **PERFORMANCE CRITERIA** | |
| Elements describe the essential outcomes. | | Performance criteria describe the performance needed to demonstrate achievement of the element. | |
| 1 | Determine the extent of reinforcement required in a concrete structure. | 1.1 | Identify relevant standards, manuals and local practice to determine correct placement of reinforcing steel and correct cover requirements. |
| | | 1.2 | Use data from relevant standards, detailing manuals and current local practice to produce a drawing of reinforced concrete drawings related to the proper placement of reinforcement. |
| 2 | Draw outlines of concrete structural elements using design detail views. | 2.1 | Draw a detail view with construction details to show the correct outlines of at least 3 different reinforced concrete structural elements. |
| | | 2.2 | Label and dimension a design view using appropriate symbols, terminology, line work and printing in accordance with relevant drawing standards. |
| 3 | Identify, label and dimension reinforcement. | 3.1 | Draw, label and dimension a reinforcing steel structure using appropriate symbols, terminology, line work and printing in accordance with relevant drawing standards and given reinforcement steel application design. |
| 4 | Draw various bar types, bends, standard hooks, and standard bar shapes. | 4.1 | Create a drawing with labels and dimensions of hooks, cogs, bends and standard bar shapes using appropriate symbols, terminology, linework and printing, in accordance with relevant drawing standards. |
| 5 | Display and define bars and fabric in their correct relationship. | 5.1 | Draw and label reinforcement bar sets and fabric in accordance with drawing standard AS 1100.501. |

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| | | 5.2 | Draw bars and fabric in detail views both with reference to other reinforcement and with other concrete elements of the structure. |
| | | 5.3 | Specify the appropriate concrete cover to steel reinforcement. |
| 6 | Use an appropriate marking system to identify steel reinforcement. | 6.1 | Identify an appropriate bar marking system and apply it to correctly identify all reinforcement bar sets in concrete structural elements of a complex drawing using appropriate symbols, terminology, linework and printing, in accordance with relevant drawing standards. |
| 7 | Prepare steel reinforcement bar bending schedules and calculate steel quantities. | 7.1 | Complete a steel reinforcement bar bending schedule as shown on a drawing, for various concrete structural elements using relevant data. |
| | | 7.2 | Calculate and document the steel bar and fabric sheet quantities on a bar bending schedule. |
| | | 7.3 | Calculate and document the steel mass quantities on a bar bending schedule. |
| 8 | Determine the appropriate splice lengths and anchorage lengths to satisfy given conditions. | 8.1 | Label views by applying given relevant data from relevant standards to determine the correct splice and anchorage lengths. |
| 9 | Draw construction and expansion joints. | 9.1 | Draw detail views of a concrete construction joint and expansion joint using relevant data. |

**FOUNDATION SKILLS**

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

**UNIT MAPPING INFORMATION**

No equivalent units.

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| **TITLE** | **Assessment requirements for DCSBCD617 Produce basic concrete drawings** |
| **PERFORMANCE EVIDENCE** | To achieve competency in this unit, a person must satisfy the requirements of the elements and performance criteria, foundation skills and range of conditions included in the unit.<br>The person must also:<br>• prepare a reinforced concrete design drawing of concrete structural elements complying with Australian standards AS 3600 and AS 1100.50<br>• Identify and obtain appropriate resources<br>Note: If a specific volume or frequency is not stated, then evidence must be provided at least once for each criterion. |

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| **KNOWLEDGE EVIDENCE** | To achieve competency in this unit, a person must demonstrate knowledge of:<br>• interpretation and applications of AS 1100, AS 2807 and AS 3600. |
| **ASSESSMENT CONDITIONS** | **Assessment Conditions:**<br>All assessment must be completed in accordance with work health and safety standards.<br><br>When assessments are conducted remotely, invigilation software must be used to ensure authenticity of work completed.<br><br>Model answers or marking guides must be provided for all assessments to ensure reliability of assessment judgements when marking is undertaken by different assessors.<br><br>Assessors must gather a range of evidence that is valid, sufficient, authentic, and current.<br><br>Questioning techniques must not require language, literacy and numeracy skills beyond those required in this module.<br><br>The candidate must have access to all tools, equipment, materials and documentation required.<br><br>**Assessor Requirements:**<br>Assessment must be conducted only by persons who:<br>• hold vocational competencies at least to the level being delivered and assessed<br>• maintain current industry skills directly relevant to the training and assessment being provided<br>• hold a tertiary qualification in engineering or a related field<br>• meet the assessor requirements specified in the current Standards for Registered Training Organisations (RTOs)<br>• undertake ongoing professional development in vocational training, learning, and assessment, including competency-based training and assessment, as required by their RTO.<br><br>The RTO must also ensure that trainers and assessors keep their industry knowledge up to date through ongoing professional development.<br><br>The RTO must take appropriate steps, as an ongoing procedure, to verify information about trainer and assessor's qualifications. |