‘ 

**THE REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARDS**

**FOR**

**MASON**

**LEVEL 4**



TVET CDACC

P.O. BOX 15745-00100

NAIROBI

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# FOREWORD

The provision of quality education and training is fundamental to the Government’s overall strategy for social economic development. Quality education and training will contribute to achievement Kenya’s development blue print and sustainable development goals.

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution and this resulted to the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No. 4 of 2016). A key feature of this policy is the radical change in the design and delivery of the TVET training. The policy document requires that training in TVET shall be competency based, curriculum development shall be industry led, certification shall be based on demonstration of competence and mode of delivery shall allow for multiple entry and exit in TVET programs.

These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that these Occupational Standards were developed for the purpose of developing a competency based curriculum for Masons Level 4. These Occupational Standards will also be the bases for assessment of an individual for competence certification.

It is my conviction that these Occupational Standards will play a great role towards development of competent human resource for the Construction sector’s growth and sustainable development.

**PRINCIPAL SECRETARY**

**VOCATIONAL AND TECHNICAL TRAINING**

**MINISTRY OF EDUCATION**

# PREFACE

Kenya Vision 2030 aims to transform the country into a newly industrializing, “middle income country providing a high quality life to all its citizens by the year 2030”. Kenya intends to create a globally competitive and adaptive human resource base to meet the requirements of a rapidly industrializing economy through life-long education and training. TVET has a responsibility of facilitating the process of inculcating knowledge, skills and attitudes necessary for catapulting the nation to a globally competitive country, hence the paradigm shift to embrace Competency Based Education and Training (CBET).

The Technical and Vocational Education and Training Act No. 29 of 2013 and the Sessional Paper No. 4 of 2016 on Reforming Education and Training in Kenya, emphasized the need to reform curriculum development, assessment and certification. This called for shift to CBET to address the mismatch between skills acquired through training and skills needed by industry as well as increase the global competitiveness of Kenyan labour force.

The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC), in conjunction with Construction Sector Skills Advisory Committee (SSAC) have developed these Occupational Standards for Masons Level 4. These occupational standards will be the basis for development of competency based curriculum for Masons. These Standards will also be the basis for assessment of an individual for competence certification.

The occupational standards are designed and organized with clear performance criteria for each element of a unit of competency. These standards also outline the required knowledge and skills as well as evidence guide.

I am grateful to Council Secretariat, Council Technical Committee, Construction SSAC and expert workers and all those who participated in the development of these occupational standards.

**CHAIRPERSON,**

**TVET CDACC**

# ACKNOWLEDGMENT

These Occupational Standards were developed through combined effort of various stakeholders from private and public organizations. I am sincerely thankful to the management of these organizations for allowing their staff to participate in this course. I wish to acknowledge the invaluable contribution of industry players who provided inputs towards the development of these Standards.

I thank TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) for providing guidance on the development of these Standards. My gratitude goes to the Construction Sector Skills Advisory Committee (SSAC) members for their contribution to the development of these Standards. I also thank all the individuals and organizations who participated in the validation of these Standards.

I acknowledge any other institution which in one way or another contributed to the success of development of these Standards but has not been mentioned.

**CHAIRPERSON**

**CONSTRUCTION SECTOR SKILLS ADVISORY COMMITTEE**

# 

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# ACRONYMS

|  |  |
| --- | --- |
| BC  CC  CDACC  CPU  CR  CON  MA  ICT  KCSE  KNQA  NEMA  OS  OSHA  OSHS  PPE  SOPs  SSAC  TVET | Basic Competency  Common Competency  Curriculum Development, Assessment and Certification Council  Central Processing Unit  Core Competency  Construction Sector  Masonry  Information Communication Technology  Kenya Certificate of secondary Education  Kenya National Qualifications Authority  National Environmental Management Authority  Occupational Standards  Occupation Safety and Health Act  Occupation Safety and Health Standards  Personal Protective Equipment  Standard Operating Procedures  Sector Skills Advisory Committee  Technical and Vocational Education and Training |

# KEY TO UNIT CODE

**CON/OS/MA/BC/01/4/A**

Industry or sector

Occupational Standards

Occupational area

Type of competency

Competency number

Competency level

Version control

# OVERVIEW

Masonry level 4 qualification consists of competencies that an individual must achieve to construct building substructures and superstructures, finish masonry works and produce masonry construction units.

This qualification consists of the following basic, common and core competencies:

**BASIC COMPITENCIES**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| CON/OS/MA/BC/01/4/A | Demonstrate communication skills |
| **CON/OS/MA/BC/02/4/A** | Demonstrate numeracy skills |
| **CON/OS/MA/BC/03/4/A** | Demonstrate digital literacy |
| **CON/OS/MA/BC/04/4/A** | Demonstrate entrepreneurial skills |
| **CON/OS/MA/BC/05/4/A** | Demonstrate employability skills |
| **CON/OS/MA/BC/06/4/A** | Demonstrate environmental literacy |
| **CON/OS/MA/BC/07/4/A** | Demonstrate occupational safety and health practices |

**COMMON COMPETENCIES**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| **CON/OS/MA/CC/01/4/A** | Measure and calculate objects’ parameters |
| **CON/OS/MA/CC/02/4/A** | Interpret and draw simple working drawings |

**CORE COMPETENCIES**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| **CON/OS/MA/CR/01/4/A** | Construct building substructures |
| **CON/OS/MA/CR/02/4/A** | Construct building superstructures |
| **CON/OS/MA/CR/03/4/A** | Finish masonry works |
| **CON/OS/MA/CR/04/4/A** | Produce masonry construction units |

# BASIC UNITS OF COMPETENCY

# DEMONSTRATE COMMUNICATION SKILLS

**UNIT CODE:** CON/OS/MA/BC/01/4/A

**UNIT DESCRIPTION**

This unit covers the competencies required demonstrate communication skills. It involvesobtaining and conveying workplace information, completing relevant work-related documents, communicating information about workplace processes, leading workplace discussion and communicating workplace issues.

**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. Obtain and convey workplace information | 1. Specific and relevant information is accessed from ***appropriate sources*** based on standard procedures 2. Effective questioning, active listening and speaking skills are used to gather and convey information based on communication needs 3. Appropriate ***medium*** is used to transfer information and ideas in accordance with workplace guidelines 4. Appropriate non- verbal communication is used as per the communication needs 5. Appropriate lines of communicationwith supervisors and colleagues are identified and followed based on workplace requirements 6. Location and storage of information is undertaken according to workplace procedures    1. Personal interaction is carried out clearly and concisely according to workplace requirements |
| 1. Complete relevant work-related documents | * 1. Range of forms relating to conditions of employment are completed according to workplace procedures   2. Workplace data is recorded based on workplace requirements   3. Errors in recording information are identified and acted upon in accordance with workplace policies   4. Reporting requirements are completed according to organizational guidelines |
| 1. Communicate information about workplace processes | 1. Information sources are identified according to workplace procedures 2. ***Methods of communication*** are selected based on workplace guidelines 3. Multiple operations are communicated according to workplace structure 4. Work-related questions are asked and responded based on set protocols 5. Information is selected and organized according to workplace requirements 6. Verbal and written reporting is undertaken as per workplace requirements 7. Communication is maintained according to workplace standards |
| 1. Lead workplace discussions | 1. Response to workplace issues are sought and provided as per workplace protocol 2. Constructive contributions are made based on ***workplace discussions*** 3. Workplace objectives and action plan are communicated according to workplace requirements |
| 1. Identify and communicate issues arising in the workplace | 1. Issues and problems are identified as per workplace guidelines 2. Problems and issues in the workplace are organized according to workplace operations 3. Dialogue is initiated with appropriate personnel as per workplace structure 4. Problems and issues raised are communicated as per the workplace reporting procedures |

**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. Methods of communication mayinclude but not limited to: | * Non-verbal gestures * Verbal * Face to face * Two-way radio * Speaking to groups * Using telephone * Written * Internet |
| 1. Workplace discussion may include but not limited to: | * Coordination meetings * Toolbox discussion * Peer-to-peer discussion |

**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:

* Communication
* Active listening
* Interpretation
* Negotiation
* Writing

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Organization requirements for written and electronic communication methods
* Effective verbal communication methods
* Report writing
* Effective questioning techniques (clarifying and probing)
* Workplace etiquette

**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. Dealt with a range of communication/information at one time 2. Made constructive contributions in workplace issues 3. Sought workplace issues effectively 4. Responded to workplace issues promptly 5. Presented information clearly and effectively in written form 6. Used appropriate sources of information 7. Asked appropriate questions 8. Provided accurate information |
| 1. Resource Implications | 1. Access to relevant workplace where assessment can take place 2. Appropriately simulated environment where assessment can take place 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | 1. Third-party reports 2. Portfolio 3. Interview 4. Written tests 5. Observation 6. Oral questioning |
| 1. Context of Assessment | Competency may be assessed   1. On the job 2. Off the job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE NUMERACY SKILLS

**UNIT CODE:** CON/OS/MA/BC/02/4/A

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate numeracy skills. It involves identifying and using whole numbers and simple fractions, decimals and percentages for work, identifying, measuring and estimating familiar quantities for work, reading and using familiar maps, plans and diagrams for work, identifying and describing common 2D and some 3D shapes for work, constructing simple tables and graphs for work using familiar data and identifying and interpreting information in familiar tables, graphs and charts for work

**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. Identify and use whole numbers and simple fractions, decimals and percentages for work | | 1. Simple fractions, decimals and percentages identified and interpreted as per standard operating procedures. 2. Understanding of place value by organising numbers from smallest to largest demonstrated as SOPs 3. Required numerical information located and decision made on appropriate method to solve a problem as per SOPs 4. Limited range of calculations performed using the four operations using SOPs 5. Links between operations described as per SOPs 6. Estimations made to check reasonableness of results of problem-solving process as SOPs 7. Numerical information recorded, and the result of the task communicated using informal and some formal language and symbolism as per workplace procedures |
| 1. Identify, measure and estimate familiar quantities for work | 1. Measurement information in workplace tasks and texts identified and interpreted as per workplace procedures. 2. Familiar units of measurement needed for tasks is identified as per measurements manuals/charts 3. Familiar and simple amounts estimated as per workplace procedures. 4. Appropriate measuring equipment selected as per SOPs 5. ***Simple measuring equipment*** graduated in familiar units to measure relevant quantities is used as per graduation manuals. 6. Calculation done using familiar units of measurement as per SOPs 7. Measurements and results checked against estimates as per job specifications. 8. Results are recorded or reported as per workplace procedures 9. Results relevant to the workplace task are communicated using informal and some formal mathematical and general language as per workplace procedures. |
| 1. Read and use familiar maps, plans and diagrams for work | 1. Items and places are in familiar maps, plans and diagrams as per SOPs 2. Common symbols and keys recognised in familiar maps, plans and diagrams as per SOPs 3. Understanding of direction and location demonstrated by describing the location of objects, or route to familiar places as per SOPs 4. Instructions to locate familiar objects or places are given and followed as per SOPs 5. Informal and some formal oral mathematical language and symbols are used as per SOPs |
| 1. Identify and describe common 2D and some 3D shapes for work | 1. ***Common 2D shapes and some common 3D shapes*** in familiar situations are identified and named as per job requirements 2. Common 2D shapes and designs are compared and classified as per SOPs 3. Informal and some formal language used to describe common two-dimensional shapes and some common three-dimensional shapes in accordance with workplace procedures. 4. Simple items used to draw or construct common 2D shapes as per workplace procedures. 5. Common 3D shapes matched to their 2D sketches or nets as per SOPs |
| 1. Construct simple tables and graphs for work using familiar data | 1. Common types of graphs are identified and named as per SOPs 2. Familiar data to be collected is determined in accordance with job specifications. 3. A method to collect data is selected in accordance with workplace procedures. 4. A small amount of simple familiar data is collected as per workplace procedures 5. One or two variables determined from the data collected as per SOPs. 6. Data ordered and collated as per standard operating procedures. 7. A table is constructed and data entered as per SOPs 8. Graphs are constructed using data from table as per job specifications 9. Results are promptly checked as per workplace procedures 10. Graph information related to work is reported or discussed using informal and some formal mathematical and general language as per workplace procedures |
| 1. Identify and interpret information in familiar tables, graphs and charts for work | 1. Simple tables are identified in familiar texts and contexts in accordance with workplace procedures 2. Title, headings, rows and columns located in familiar tables as per SOPs 3. Information and data in simple tables identified and interpreted as per workplace procedures. 4. Information is related in accordance with workplace tasks 5. Familiar graphs and charts are identified in familiar texts and contexts as per SOPs 6. Title, labels, axes, scale and key from familiar graphs and charts are located as per SOPs 7. Information and data in familiar graphs and charts are identified and interpreted as per job requirements 8. Information is related to relevant workplace tasks as per job requirements. |

**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.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Simple measuring equipment may include but not limited to: | * Rulers * Watches/clocks * Scales * Thermometers * AVO meter |
| 1. Common 2D shapes and common 3D shapes may include but not limited to: | * Round * Square * Rectangular * Triangle * Sphere * Cylinder * Cube * Polygons * Cuboids |

**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:

* Measuring
* Logical thinking
* Computing
* Drawing of graphs
* Applying mathematical formulas
* Analytical

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Types of common shapes
* Differentiation between two dimensional shapes / objects
* Formulae for calculating area and volume
* Types and purpose of measuring instruments
* Units of measurement and abbreviations
* Fundamental operations (addition, subtraction, division, multiplication)
* Rounding techniques
* Types of fractions
* Different types of tables and graphs
* Meaning of graphs, such as increasing, decreasing, and constant value
* Preparation of basic data, tables & graphs

**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. Simple fractions, decimals and percentages are correctly identified and interpreted   2. Performed a limited range of calculations using the 4 operations   3. Performed calculations using familiar units of measurement   4. Recognised common symbols and keys in familiar maps, plans and diagrams   5. Constructed simple tables and graphs using familiar data   6. Identified and interpret information in familiar tables, graphs and charts |
| 1. Resource Implications | 1. Access to relevant workplace where assessment can take place 2. Appropriately simulated environment where assessment can take place 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   1. Written Test 2. Interview 3. Oral Questioning |
| 1. Context of Assessment | Competency may be assessed   1. On the job 2. Off the job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE DIGITAL LITERACY

**UNIT CODE:** CON/OS/MA/BC/03/4/A

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate digital literacy in a working environment. It entails identifying computer software and hardware, applying security measures to data, hardware, software , applying computer software in solving task sand applying internet and email in communication at workplace.

**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. Identify computer software and hardware | * 1. ***Appropriate computer software*** is identified according to manufacturer’s specification   2. ***Appropriate computer hardware*** is identified according to manufacturer’s specification |
| 1. Apply security measures to data, hardware, software | * 1. ***Data security and privacy are classified*** in accordance with the technological situation   2. ***Security and control measures*** are applied in accordance with laws governing protection of ICT   3. Computer threats and crimes are detected as per information security management guidelines.   4. Protection against computer crimes is undertaken in accordance with laws governing protection of ICT |
| 1. Apply computer software in solving tasks | * 1. Basic word processing concepts are applied in resolving workplace tasks   2. Word processing utilities are applied in accordance with workplace procedures   3. Data is manipulated on worksheet in accordance with office procedures |
| 1. Apply internet and email in communication at workplace | * 1. Electronic mail is applied in workplace communication in accordance with office procedures   2. Office internet functions are defined and executed in accordance with office procedures   3. Network configuration and uses are determined in accordance with office operations procedures |

**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.

|  |  |
| --- | --- |
| **Range** | **Variable** |
| 1. Appropriate computer software may include but not limited to: | * Operating system * MS office * Web browser * Media players |
| 1. Appropriate computer hardware may include but not limited to: | * Computer Case * Monitor * Keyboard * Mouse * Hard Disk Drive * Motherboard * Video Card |
| 1. Data security and privacy may include but not limited to: | * Confidentiality * Cloud computing * Confidentiality * Cyber terrorism * Integrity -but-curious data serving |
| 1. Security and control measures may include but not limited to: | * Countermeasures and risk reduction * Cyber threat issues * Risk management |

**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:

* Analytical
* Interpretation
* Typing
* Communication
* Computing

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Input and output devices
* Central processing Unit (CPU)
* Peripherals
* Storage Media
* Software concept
* Types of concept
* Function of computer software
* Data security and privacy
* Security threats and control measures
* Computer crimes
* Detection and protection of computer crimes
* Laws governing protection of ICT
* Word processing;
* Functions and concepts of word processing.
* Documents and tables creation and manipulations
* Mail merging
* Word processing utilities
* Spread sheet;
* Meaning, formulae, function and charts, uses, layout, data manipulation and application to cell
* Networking and Internet;
* Meaning, functions and uses of networking and internet.
* Electronic mail and world wide web
* Emerging trends and issues in ICT;
* Identify and apply emerging trends and issues in ICT
* Challenges posed by emerging trends and issues

**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. Identified input, output, CPU and storage media devices of computers in accordance to computer specification   2. Identified concepts, types and functions of computer software according to operation manual   3. Identified and controlled security threats   4. Detected and protected computer crimes   5. Applied word processing in office tasks   6. Prepared work sheet and applied data to the cells in accordance to workplace procedures   7. Used Electronic Mail for office communication as per workplace procedure   8. Applied internet and World Wide Web for office tasks in accordance with office procedures   9. Applied laws governing protection of ICT |
| 1. Resource Implications | * 1. Access to relevant workplace where assessment can take place   2. Appropriately simulated environment where assessment can take place   3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Practical assignment   3. Interview   4. Oral Questioning   5. Observation |
| 1. Context of Assessment | Competency may be assessed   1. On the job 2. Off the job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# 

# DEMONSTRATE ENTREPRENEURIAL SKILLS

**UNIT CODE:** CON/OS/MA/BC/04/4/A

**UNIT DESCRIPTION**

This unit covers the competencies required demonstrate entrepreneurial skills. It involvescreating and maintaining small scale business, establishing small scale business customer base, managing small scale business and growing/ expanding small scale business.

**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. Create and maintain small scale business | 1. Generation and evaluation of business ideas is undertaken in accordance with the existing procedure 2. Competencies are matched with business opportunities in accordance with business practices. 3. Procedure for starting a small business is identified as per the legal requirements 4. SWOT/ PESTEL analysis and or industrial survey is carried out according to office procedures 5. ***Business operations*** are monitored and controlled following established procedures. 6. Quality assurance measures are implemented in accordance with the business practices. 7. Good relations are maintained with staff/workers as per the workplace policies. 8. Policies and procedures on occupational safety and health and environmental concerns are constantly observed as per the workplace policies |
| 1. Establish small scale business customer base | 1. Good customer relations are maintained in accordance with office procedures 2. New customers and markets are identified, explored and reached out to according to the marketing plan 3. Promotions/Incentives are offered to loyal customers in accordance with office procedures 4. Additional products and services are evaluated and tried in accordance with marketing strategy 5. Customer record is maintained in accordance with office procedures |
| 1. Manage small scale business | 1. Enterprise is built up and sustained in line with judicious control of cash flows. 2. Profitability of enterprise is ensured as per the internal controls. 3. Unnecessary or lower-priority expenses and purchases are avoided as per the marketing strategy 4. Basic cost-benefit analysis are undertaken in accordance with office procedures 5. Basic financial management are undertaken in accordance with office procedures 6. Basic financial accounting in undertaken in accordance with office procedures 7. Business ***internal controls*** are implemented in accordance with office procedure 8. Setting business priorities and strategies is carried out according to office procedures 9. Preparation and interpretation of basic financial statements is undertaken in accordance with set procedures 10. Preparation of business plansfor small business is undertaken in accordance with ***business strategy*** 11. Business Social Responsibility is maintained in accordance with Standard Operations Procedures (SOP) |
| 1. Grow/ expand small scale business | 1. Prepared business growth strategy for small sale business in accordance with office procedures 2. Incorporated technology in small scale business growth in accordance with technological trends 3. Emerging issues and trends are considered in accordance with business growth strategy 4. Built audience interest in product/service according to growth strategy 5. Boosted cooperate communication according to business ***communication strategy*** |

**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. Business operations may include but not limited to: | * Purchasing * Accounting/administrative * Work production/operations/sales * Marketing |
| 1. Internal control may include but not limited to: | * Accounting systems * Financial statements/reports * Cash management * Human resource management |
| 1. Business Strategy may include but not limited to: | * Management of wastages * Environmental Conservation |
| 1. Communication strategy may include but not limited to: | * Blue print of exchange of information * Technology and exchange of information |

**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:

* Marketing
* Advertising
* Basic bookkeeping
* Accounting
* Communication

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Generation and evaluation of business ideas
* Legal requirements for starting a small business
* SWOT/ PESTEL analysis
* Occupational Safety and Health
* Public relations concepts
* Business plan
* Business financing
* Marketing strategies
* Business management and control
* Production/ operation process
* Product promotion strategies
* Market and feasibility studies
* Business ethics
* Building customer relations
* Business models and strategies
* Types and categories of businesses
* Business internal controls
* Relevant national and local legislation and regulations
* Basic quality control and assurance concepts
* Building relations with customer and employees
* Building competitive advantage of the enterprise
* Business growth strategies

**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. Demonstrated entrepreneurial skills 2. Demonstrate competencies to create a small-scale business 3. Demonstrated ability to conceptualize and plan a micro/small business 4. Grew customer base for the small-scale business 5. Demonstrated ability to manage/operate a micro/small-scale business 6. Demonstrated competencies to grow a micro/small-scale business | |
| 1. Resource Implications | |  | | --- | | The following resources should be provided: |  1. Assessment location 2. Case studies on micro/small-scale enterprises 3. Assessment materials |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   |  |  | | --- | --- | | 1. Written tests 2. Observation 3. Oral questioning 4. Portfolio 5. Projects |  | |
| 1. Context of Assessment | Competency may be assessed   1. On the job 2. Off the job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

**DEMONSTRATE EMPLOYABILITY SKILLS**

**UNIT CODE:** CON/OS/MA/BC/05/4/A

**UNIT DESCRIPTON**

This unit covers competencies required to demonstrate employability skills. It involves conducting self-management, demonstrating critical safe work habits, demonstrating workplace learning and workplace ethics.

**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. Conduct self-management | 1. Personal vision, mission and goals are formulated based on potential and in relation to organization objectives 2. Emotional intelligence is demonstrated as per workplace requirements. 3. Individual performance is evaluated and monitored according to the agreed targets. 4. Assertiveness is developed and maintained based on the requirements of the job. 5. Accountability and responsibility for own actions are demonstrated based on workplace instructions. 6. Self-esteem and a positive self-image are developed and maintained based on values. 7. Time management, attendance and punctuality are observed as per the organization policy. 8. Goals are managed as per the organization’s objective 9. Self-strengths and weaknesses are identified based on personal objectives |
| 1. Demonstrate critical safe work habits | 1. Stress is managed in accordance with workplace policy. 2. Punctuality and time consciousness is demonstrated in line with workplace policy. 3. Personal objectives are integrated with organization goals based on organization’s strategic plan. 4. ***Resources*** are utilized in accordance with workplace policy. 5. Work priorities are set in accordance to workplace goals and objectives. 6. Leisure time is recognized and utilized in line with personal objectives. 7. ***Drugs and substances of abuse*** are identified and avoided based on workplace policy. 8. HIV and AIDS prevention awareness is demonstrated in line with workplace policy. 9. Safety consciousness is demonstrated in the workplace based on organization safety policy. 10. ***Emerging issues*** are identified and dealt with in accordance with organization policy. |
| 1. Demonstrate workplace learning | * 1. Learning opportunities are sought and managed based on job requirement and organization policy.   2. Improvement in performance is demonstrated based on courses attended.   3. Application of learning is demonstrated in both technical and non-technical aspects based on requirements of the job   4. Time and effort is invested in learning new skills based on job requirements   5. Initiative is taken to create more effective and efficient processes and procedures in line with workplace policy.   6. New systems are developed and maintained in accordance with the requirements of the job.   7. Awareness of personal role in workplace ***innovation*** is demonstrated based on requirements of the job. |
| 1. Demonstrate workplace ethics | 1. Policies and guidelines are observed as per the workplace requirements 2. Self-worth and professionalism is exercised in line with personal goals and organizational policies 3. Code of conduct is observed as per the workplace requirements 4. Integrity is demonstrated as per legal requirement |

**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.

|  |  |
| --- | --- |
| **Range** | **Variable** |
| 1. Personal objectives may include but not limited to: | * Long term * Short term * Broad * Specific |
| 1. Feedback may include but not limited to: | * Verbal * Written * Informal * Formal |
| 1. Team may include but not limited to: | * Small work group * Staff in a section/department * Inter-agency group |
| 1. Drug and substance abuse may include but not limited to: | * Alcohol * Tobacco * Miraa * Over-the-counter drugs * Cocaine * Bhang * Glue |
| 1. Emerging issues may include but not limited to: | * Terrorism * Social media * National cohesion * Open offices |
| 1. Range of media for learning may include but not limited to: | * Mentoring * peer support and networking * IT and courses |
| 1. Innovation may include but not limited to: | * New ideas * Original ideas * Different ideas * Methods/procedures * Processes * New tools |

**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:

* Communication
* Interpersonal
* Critical thinking
* Observation
* Organizing
* Record keeping
* Problem solving
* Decision Making
* Resource utilization

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Work values and ethics
* Company policies
* Company operations, procedures and standards
* Occupational Health and safety procedures
* Fundamental rights at work
* Personal hygiene practices
* Workplace communication
* Concept of time
* Time management
* Decision making
* Types of resources
* Work planning
* Record keeping
* Workplace problems and how to deal with them
* Assertiveness
* Team work
* HIV and AIDS
* Drug and substance abuse
* Safe work habits
* Professional growth and development
* Technology in the workplace
* Emerging issues
  + Social media
  + Terrorism
  + National cohesion

###### 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. Conducted self-management   2. Demonstrated critical safe work habits   3. Demonstrated workplace learning   4. Demonstrated workplace ethics |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace where assessment can take place 2. Appropriately simulated environment where assessment can take place |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Oral questioning 2. Portfolio of evidence 3. Third Party Reports 4. Written tests |
| 1. Context of Assessment | Competency may be assessed   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE ENVIRONMENTAL LITERACY

**UNIT CODE:** CON/OS/MA/BC/06/4/A

**UNIT DESCRIPTION**

# This unit specifies the competencies required to demonstrate environmental literacy. It involves controlling environmental hazard, controlling environmental pollution, demonstrating sustainable resource use and evaluating current practices in relation to resource usage.

**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. Control environmental hazard | * 1. Storage methods for environmentally hazardous materials are followed according to environmental regulations and OSHS.   2. Disposal methods of hazardous wastes are followed according to environmental regulations and OSHS.   3. ***PPE*** is used according to OSHS. |
| 1. Control environmental pollution | * 1. ***Environmental pollution*** ***control measures*** are compiled following standard protocol.   2. Procedures for solid waste management are observed according Environmental Management and Coordination Act 1999   3. Methods for minimizing noise pollution complied following environmental regulations. |
| 1. Demonstrate sustainable use of resource s | * 1. Methods for minimizing wastage are complied with.   2. ***Waste management procedures*** are employed following principles of 3Rs (Reduce, Reuse, Recycle)   3. Methods for economizing or reducing resource consumption are practiced. |
| 1. Evaluate current practices in relation to resource usage | * 1. Information on resource efficiency ***systems and procedures*** are collected and provided as per work groups/sector   2. ***Current resource usage*** is measured and recorded as per work group/sector   3. Current purchasing strategies are analyzed and recorded according to industry procedures.   4. Current work processes to access information and data is analyzed following enterprise protocol. |
| 1. 5. Identify environmental legislations/conventions for environmental concerns | 1. Environmental legislations/conventions and local ordinances are identified according to the different environmental aspects/impact 2. Industrial standard/environmental practices are described according to the different environmental concerns |

**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.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. PPE may include but are not limited to: | * Masks * Gloves * Goggles * Safety hat * Overall * Hearing protector * Safety boots |
| 1. Environmental pollution control measures may include but are not limited to: | * Methods for minimizing or stopping spread and ingestion of airborne particles * Methods for minimizing or stopping spread and inhaling gases and fumes * Methods for minimizing or stopping spread and ingestion of liquid wastes |
| 1. Waste management procedures may include but are not limited to: | * Sorting * Storing of items * Recycling of items * Disposal of items * Handling * Transport |
| 1. Current resources usage may include but are not limited to: | * Electric * Water * Fuel * Telecommunications * Supplies * Materials |

**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:

* Measuring
* Recording
* Analytical
* Monitoring
* Writing
* Communication

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Storage methods of environmentally hazardous materials
* Disposal methods of hazardous wastes
* Usage of PPE Environmental regulations
* OSHS
* Types of pollution
* Environmental pollution control measures
* Different solid wastes
* Solid waste management
* Different noise pollution
* Methods of minimizing noise pollution
* Solid Waste Act
* Methods of minimizing wastage
* Waste management procedures
* Economizing of resource consumption
* Principle of 3Rs
* Types of resources
* Techniques in measuring current usage of resources
* Calculating current usage of resources
* Types of workplace environmental hazards
* Environmental regulations
* Environmental regulations applying to the enterprise.
* Procedures for assessing compliance with environmental regulations.
* Collection of information on environmental and resource efficiency systems and procedures,
* Measurement and recording of current resource usage
* Analysis and recording of current purchasing strategies.
* Analysis current work processes to access information and data Analysis of data and information

**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. Controlled environmental hazards 2. Controlled environmental pollution 3. Demonstrated sustainable resource use 4. Evaluated current practices in relation to resource usage |
| 1. Resource Implications | The following resources should be provided:   * 1. Workplace with storage facilities   2. Tools, materials and equipment relevant to the tasks (e.g. cleaning tools, cleaning materials, trash bags, etc.)   3. PPEs   4. Manuals and references   5. Legislation, policies, procedures, protocols and local ordinances relating to environmental protection   6. Case studies/scenarios relating to environmental Protection |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation 2. Oral questioning 3. Written tests 4. Third party reports 5. Portfolio |
| 1. Context of Assessment | Competency may be assessed   1. On the job 2. Off the job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

**DEMONSTRATE OCUPATIONAL SAFETY AND HEALTH PRACTICES**

**UNIT CODE:** CON/OS/MA/BC/07/4/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to practice safety and health and comply with OSH requirements relevant to work. It involves observing workplace procedures for hazards and risk prevention and participating in arrangements for workplace safety and health maintenance.

**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. Adhere to workplace procedures for hazards and risk prevention | 1. Arrangement of work area and items in accordance with   workplace procedures requirements   1. Work standards and procedures are followed based on instructions 2. ***Prevention and control measures*** are applied based on instructions |
| 1. Participate in arrangements for workplace safety and health maintenance | 1. Orientations on ***OSH requirements and regulations*** is undertaken in line with policy. 2. Feedback on occupational health and safety are provided as per workplace instructions. 3. Workplace procedures for reporting hazards, incidents, injuries and sickness are adhered to as per workplace policy. 4. ***OSH-related training needs*** are identified and proposed as per workplace policy. |

**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.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Prevention and control measures may include but are not limited to: | * Eliminate the hazard * Isolate the hazard * Substitute the hazard with a safer alternative * Use administrative controls to reduce the risk * Use engineering controls to reduce the risk * Use personal protective equipment * Safety, Health and Work Environment Evaluation * Periodic and/or special medical examinations of workers |
| 1. Safety gears /PPE (Personal Protective Equipment’s) may include but are not limited to: | * Arm/Hand guard, gloves * Eye protection (goggles, shield) * Hearing protection (ear muffs, ear plugs) * Hair Net/cap/bonnet * Hard hat * Face protection (mask, shield) * Apron/Gown/coverall/jump suit * Anti-static suits * High-visibility reflective vest |
| 1. Incidents and emergencies may include but are not limited to: | * Chemical spills * Equipment/vehicle accidents * Explosion * Fire * Gas leak * Injury to personnel * Structural collapse * Toxic and/or flammable vapors emission. |
| 1. OSH requirements / regulations may include but are not limited to: | * Building code * Permit to Operate |
| 1. OSH-related trainings may include but are not limited to: | * Safety Orientations relevant to tasks * Safe and Correct Operation of Tools and Equipment * Health Orientations/trainings * Prevention and Control of OSH Hazards in the workplace * Chemical Handling * Safety Trainings * Prevention and Control of Work-related Injuries and Illness * Basic First-aid Trainings * Emergency Response Trainings * Trainings on use of fire-extinguisher |

**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:

* Communication
* Knowledge management
* Collaborating
* Interpersonal
* Troubleshooting
* Critical thinking
* Observation

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* General OSH principles and legislations
* Principles of good housekeeping (5S)
* Company/workplace policies/ guidelines
* Standards and safety requirements of work process and procedures
* Standard Workplace emergency plan and procedures
* Safety and health requirements of tasks
* Workplace guidelines on providing feedback on OSH and security concerns
* OSH regulations
* Hazard control procedures
* OSH trainings relevant to work

**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 | 1. Assessment requires evidence that the candidate: 2. Arranged work area and items in accordance with 3. workplace procedures requirements 4. Followed work standards and procedures based on instructions 5. Applied ***Prevention and control measures*** based on instructions 6. Undertook orientations on ***OSH requirements and regulations*** in line with policy. 7. Provided feedback on occupational health and safety as per workplace instructions. 8. Adhered to workplace procedures for reporting hazards, incidents, injuries and sickness to as per workplace policy. 9. Identified and proposed ***OSH-related training needs*** as per workplace policy. |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace where assessment can take place 2. Appropriately simulated environment where assessment can take place |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Oral questioning 2. Portfolio of evidence 3. Third Party Reports 4. Written tests |
| 1. Context of Assessment | Competency may be assessed   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# COMMON UNITS OF COMPETENCY

# MEASURE AND CALCULATE OBJECTS’ PARAMETERS

**UNIT CODE:** CON/OS/MA/CC/01/4/A

**UNIT DESCRIPTION**

This unit of competency covers the competencies required to measure and calculate various parameters of an object. It entails identifying objects to be measured and calculated, using and caring for measuring tools and calculation instruments and calculating parameters of a given object.

This standard 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. ***Bold and italicized terms are elaborated in the Range*** |
| 1. Identify objects to be  measured and calculated | 1. ***Object or component*** to be measured is identified, classified and interpreted according to the appropriate ***geometric shapes.*** 2. ***Objects parameters*** are identified and measured as per the specifications or job requirements 3. Specifications for measurement and calculations are obtained from relevant sources. |
| 2. Use and care for measuring tools and calculation instruments | 1. ***Measuring tools and calculating instruments*** are obtained according to job requirements. 2. Measuring tools and calculation instruments are checked to the limit of accuracy as per manufacturer’s manual. 3. Measuring and calculation instruments are maintained as per manufacturer’s instructions. 4. Personal Protective Equipment is used in line with occupational safety and health regulations. |
| 3. Calculate parameters of a given object. | 1. Object is measured and readings recorded based of specification of the job. 2. Systems of measurement are identified and converted according to job requirements. 3. Calculations needed to complete tasks are performed based on job specifications. 4. Numerical computation are checked and corrected for accuracy as per workplace policy. 5. Measurements and calculations are documented as per workplace policy. |

**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.

|  |  |
| --- | --- |
| **Variable** | **Range:** |
| 1. Objects/components May include but is not limited to: | * Building blocks * Bricks * Doors * Windows * Aggregates * Cement * Timber * Reinforcement bars |
| 2. Geometric shapes May include but is not limited to: | * Round * Square * Rectangular * Triangle * Sphere * Conical * Prism * cylinder |
| 3. Measuring tools and calculation instruments May include but is not limited to: | * Micrometer gauge (In-out, depth) * Vernier calipers (outside, inside, depth) * Straight edge * Try-square * Protractor * Steel rule * Gauges * Tape measure * Pair of compass * Pair of dividers * Calculator * T-Square * Scale rule * Set square(600and 450) * Digital weighing machine * Optical instruments |
| 4. Object parameters | * Linear * Volume * Area * Displacement * Inside diameter * Circumference * Length * Thickness * Outside diameter * Tapering * Out of roundness |

**REQUIRED SKILLS AND KNOWLEDGE**

**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:

* Numeracy.
* Measuring
* Problem solving
* Visualizing
* Interpreting
* Tool handling
* Communication
* Inter personal
* Reading
* Analytical
* Teamwork
* Time management

**Required knowledge:**

The individual needs to demonstrate knowledge of:

* Four fundamental operations
* Linear measurements
* Dimensions
* Unit conversion
* Ratio and proportion
* Algebraic equations
* Use and maintenance of masonry tools and equipment
* Geometrical shapes.

**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 | Assessment requires evidence that the candidate:   1. Identified objects and object parameters correctly 2. Selected and prepared measuring and calculation instruments correctly. 3. Performed measurements and calculations accurately 4. Checked measuring and calculation instruments accuracy correctly 5. Measured and recorded object(s) readings accurately 6. Identified and converted systems correctly 7. Self-checked and corrected numerical computations accurately |
| 2. Resource implications for competency certification | The following resources should be provided:  2 .1Workplace location  2 .2 Institutional workshop  2 .3 Measuring tools and instruments  2 .4 Instructional materials |
| 3. Methods of assessment | Competency may be assessed through:  3.1Observation.  3.2Written test  3.3Interview  3.4Oral questioning  3.5Project |
| 4. Context of assessment | Competency may be assessed:  4.1On-the-job,  4.2Off-the-job or  4.3 During Work placement |
| 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# INTERPRET AND DRAW SIMPLE WORKING DRAWINGS

**UNIT CODE:** CON/OS/MA/CC/02/4/A

**UNIT DESCRIPTION**

This unit deals with competencies required to interpret and draw simple working drawings. It entails interpreting working drawings, using drawing instruments, supplies and materials, applying isometric drawings and applying different types of scales

This standard 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.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Interpret working drawings | 1. ***Working drawings*** are identified based on type***.*** 2. Scale of the drawing is read based on the drawing. 3. Measurements are converted based on best practice. 4. Symbols are identified based on technical drawings standards. |
| 2.Use drawing instruments, supplies and materials | 1. ***Drawing instrumentsand supplies*** are identified and gathered based on job requirements. 2. Drawing instruments are used and maintained as per manufacturer’s instructions. 3. Supplies and materials are used as per workplace policy. 4. Waste is disposed in due regard to environmental protection and conservation. 5. ***Personal Protective Equipment*** is used in line with occupational safety and health regulations. |
| 3.Apply isometric drawings | 1. ***Types of isometric drawings*** are identified based on international standards. 2. objects are in isometric as per the international standards 3. Principles of isometric drawing are applied in construction working drawings as per the international standards |
| 4. Apply different types of scales | 1. ***Scaled measurements*** are interpreted in accordance with international standards. 2. ***Scales*** are used in drawing simple details and drawings as per the interprated scale measurement 3. ***Measurements*** are transferred to the ground according to the working drawings. |

**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.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Working drawings May include but not limited to: | * Architectural drawings * Structural drawings * Orthographic drawings * Schematic drawings * Isometric projections * Sectional drawings * Mechanical drawings * Scaffolding and shoring plans * Formwork drawings and details * Stone dressing details drawings * Finishing detail drawings * Electrical drawings |
| 2. Personal Protective Equipment May include but not limited to: | * Hard hat / helmet * Dust Mask * Dust coat / coverall * Gloves * Safety boots * Gum boots * Reflector jackets |
| 2. Symbols May include but not limited to: | * Architectural symbols * Piping / plumbing symbols * Electrical symbols * Mechanical symbols * Steelworks details symbols * Scaled measurements symbols * Site development symbols |
| 3. Measurements May include but not limited to: | * Linear * Square-ness * Slope/gradient * Depth * Width * Level-ness |
| 4.Scaled measurements May include but not limited to: | * Reducing scales * Enlarging scales |
| 5.Drawing tools and instruments May include but not limited to: | * Drawing boards * T square * Set square * Blueprinting machine * Steel rule * Lettering stencil * Scale rule * Desktop computer * Printer * scanner * plotter |
| 1. Drawing supplies and materials May include but not limited to: | * Drawing papers * Drawing pencils * Drawing sets * Masking tape * clips * Working drawing |
| 1. Types of isometric drawings May include but not limited to: | * Cube * Cuboid * spherical * Cylindrical * Conical |

**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:

* Numeracy
* Drawing and sketching
* Visualizing
* Critical thinking
* Interpreting
* Tool handling
* Communication
* Inter personal
* Reading
* Analytical
* Measuring
* Team work
* Time management

**Required knowledge:**

The individual needs to demonstrate knowledge of:

* Working drawings
* Terms and symbols used in working drawings
* Types of lines used in working drawings.
* Common units of measurements,
* Taking measurements
* Conversion of units of measurement.
* Tools and materials for production a working drawing
* Developing a working drawing
* Interpretation of working drawings

**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 Demonstrated interpretation of the working drawings correctly.  1.2 Identified symbols of working drawings correctly  1.4 Identified types of working drawings in a construction site appropriately.  1.5 Identified types of isometric drawings correctly  1.6 Drew various objects in isometric correctly  1.7 Applied principles of isometric drawing appropriately  1.8 Interpreted scaled measurements correctly  1.9 drew simple details of a working drawing to scales accurately  1.10 Transferred measurements on the working drawings to the ground correctly. |
| 1. Resource implications for competence certification | The following resources must be provided:  2.1Workplace location  2.2 Tools, and equipment for production of working drawings  2.3 Materials relevant production of working drawings.  2.4 A complete set of construction working drawings |
| 1. Methods of Assessment | Competency may be assessed through:   1. Observation 2. Oral Questions 3. Third party report 4. Oral interview 5. project 6. Written tests 7. portfolio |
| 4. Context for  Assessment | Competency may be assessed through:  4.1 On – the –job  4.2 Off-the –job  4.3 During work placement setting |
| 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended |

# CORE UNITS OF COMPETENCY

# CONSTRUCT BUILDING SUBSTRUCTURE

**UNIT CODE:** CON/OS/MA/CR/01/4/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to construct building substructure. It entails interpreting working drawings, estimating and costing materials and supplies, use of tools and equipment, setting out the building, preparing and positioning formwork and reinforcement bars, casting the foundation, construction of foundation walling and ground floor slab.

This standard 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.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Interpret working drawings | 1. ***Working drawings*** are identified based on their features and title block***.*** 2. Scale of the drawing is read based on the drawing. 3. Measurements are converted based on best practice. 4. Symbols are identified based on working drawings standards. |
| 2. Estimate and cost materials and supplies | 1. ***Materials and supplies*** required for masonry works are identified based on the drawing and site. 2. Schedule of materials and supplies is prepared based on the drawings. 3. Materials and supplies are estimated and costed based on working drawings and specifications. |
| 3. Set-out building | 1. ***Personal Protective Equipment*** is identified and used in line with occupational safety and health regulations. 2. ***Masonry tools and equipment*** are used based on manufacturer’s instructions. 3. ***Preliminary preparation activities*** are carried out as per drawings and standard procedures 4. ***Reference points*** are located on the ground as per drawings. 5. Profiles and profile boards are fixed and levelled on the ground according to drawings and standard procedures. 6. Measurement and square-ness are checked based on standard procedure. 7. Profile lines are fixed and marked on the ground according to the drawings. 8. Masonry tools and equipment are maintained and stored based on manufacturer’s instructions. |
| 4. Prepare and position formwork and reinforcement bars | 1. Excavations and levels are ascertained based on working drawings and best practise 2. Measurements are transferred to the foundation bed based on specifications. 3. Blinding is done based on specifications. 4. Formwork is prepared and positioned based on working drawings and specifications. 5. Reinforcement bars are prepared positioned and fixed based on working drawings and specifications. |
| 5.Cast foundation walling | 1. Assemble materials for foundation base as per the specifications 2. Mix concreting materials as per the specifications 3. Cast the ***foundation base*** as per the specifications. 4. Concrete is cured as per the standard procedure |
| 6. Construct foundation walling | 1. Foundation walling units are identified based on specifications. 2. ***Foundation walling units*** are laid as per drawing and specification. 3. Curing of foundation units is done as per the standard procedure 4. Excavations are backfilled with stable soil as per best practice and specifications. 5. Soil around and in the building is treated against termites and ants as per the best practice |
| 7. Construct ground floor Slab | 1. Floor slab bed is prepared based on specifications. 2. ***Damp proofing*** is fixed as per specifications. 3. Formwork is prepared, positioned and fixed as per specifications and best practice. 4. Slab steel reinforcement is done according to working drawings and specifications. 5. Concrete is casted according to working drawings and specifications. 6. Concrete slab is ***cured*** as per standard procedure. |

**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. Working drawingsmay include but not limited to: | * Architectural drawings * Structural * MEP drawings * Site development drawings * Survey maps |
| 1. Supplies and Materials may include but not limited to: | * Ballast * Sand * Cement * Additives * Water * Timber * boards * Reinforcement Steel Bars * Damp Proofing Materials and Supplies * Lime * Chalk * Termite Control Chemicals * Hard core * Nails * Strings * Murram * BRC * Poles |
| 1. Personal Protective   Equipment may include but not limited to: | * Hard hat / helmet * Dust Mask * Goggles * Ear plugs / ear muffs * Dust coat / coverall * Gloves * Safety boots * Gum boots * Reflector jackets |
| 1. Masonry tools and equipment may include but not limited to: | * Mason square * Spirit level * Plumb bob * Trowels * Spades * Wheel barrow * Dumper * Mason string * Straight edge * Float * Concrete mixer * Dumpy level * Vibrator * Compactor * Hammer * Mattock * Machete * Sledge Hammer * Buckets * Mixing platform * Hose Pipe |
| 1. Preliminary preparation activities may include but not limited to: | * Site clearance * Hoarding * Site services * Site office/hut |
| 1. Reference points may include but not limited to: | * Datum * Building line * Temporary bench mark (TBM) |
| 1. Foundation walling may include but not limited to: | * Natural quarry stones * Engineering bricks * High density concrete blocks |
| 1. Foundation may include but not limited to: | * Slab Foundation / Raft * Suspended Foundation * Strip Foundation * Concrete Masonry Units Foundation * Footing & columns * Piles |
| 1. Damp proofing may include but not limited to: | * Damp Proofing Membrane * Damp Proof Spray * Waterproofing additives |
| 1. Curing may include but not limited to: | * Water * Jute Sacks * Blankets * Sand * Curing agents |

**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:

* Interpersonal
* Communication
* Drawing
* Interpretation of working drawings
* Problem-solving
* Critical thinking
* Organizing
* Measuring
* Numeracy
* Mortar handling
* Concrete materials mixing
* Masonry units handling
* Tool and equipment handling
* Team work
* Time management

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Interpretation of drawings and symbols
* Calculations
* Conversion of units
* Square-ness checking techniques
* Concrete mix ratios (Batching)
* Aggregates
* Cement types and uses
* Types of foundations and applications
* Soil type, structures and stabilization techniques
* Types of timber
* Water
* Formwork
* Levelling
* Steel reinforcement fixing
* Masonry units
* Use and maintenance of tools and equipment

**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. Identified working drawings correctly***.*** 2. Read drawing scale correctly. 3. Converted measurements accurately. 4. Identified symbols correctly. 5. Identified masonry materials, supplies, tools and equipment correctly. 6. Prepared schedule of materials, supplies, tools and equipment appropriately. 7. Identified appropriate personal protective equipment. 8. Used personal protective equipment correctly. 9. Used and maintained masonry tools and equipment appropriately. 10. Carried out preliminary preparation activities appropriately. 11. Located reference points on the ground accurately. 12. Fixed and levelled profiles and profile boards on the ground accurately. 13. Checked measurement and square-ness correctly. 14. Fixed and marked profile lines on the ground accurately. 15. Maintained and stored masonry tools and equipment appropriately. 16. Transferred measurements to the foundation bed accurately. 17. Laid blinding layer correctly. 18. Prepared and positioned formwork accurately. 19. Prepared and positioned reinforcement bars accurately. 20. Mixed concrete materials correctly 21. Casted foundation base correctly. 22. Identified foundation walling units correctly. 23. Laid foundation walling units correctly. 24. Backfilled and stabilized excavations appropriately. 25. Treated soil around and in the building appropriately. 26. Prepared floor slab bed appropriately. 27. Laid damp proofing appropriately. 28. Prepared, positioned and fixed formwork accurately. 29. Fixed and positioned slab reinforcement accurately. 30. Casted concrete slab appropriately. 31. Cured concrete slab appropriately. 32. Demonstrated understanding of construction of building substructure. |
| 1. Resource implications for competence certification | The following resources should be provided:   1. Access to relevant workplace where assessment can take place 2. Appropriately simulated environment where assessment can take place 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of assessment | Competency may be assessed through:  3.1Observation  3.2Oral questioning  3.3Written tests  3.4Portfolio  3.5 Third party report |
| 1. Context of Assessment | Assessment may be done:  4.1. On-the-job,  4.2. Off-the-job or  4.3. During Work placement. |
| 1. Guidance information for assessment | The unit may be assessed alone or together with other related units. |

# CONSTRUCT BUILDING SUPERSTRUCTURE

**UNIT CODE:** CON/OS/MA/CR/02/4/A

**UNIT DESCRIPTION:**

This unit specifies the competencies required to construct building superstructure. It entails interpreting working drawings, estimating and costing materials and supplies, Setting out building super structures, preparing position and cast columns , constructing super-structure walling and suspended floor slab and beams

This standard 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.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Interpret working drawings | 1. ***Working drawings*** are identified based on their features and title block***.*** 2. Scale of the drawing is read based on the drawing. 3. Measurements are converted based on best practice. 4. Symbols are identified based on working drawings standards. |
| 2. Estimate and cost materials and supplies | 1. ***Materials and supplies*** required for masonry works are identified based on the drawing and site. 2. Schedule of materials and supplies is prepared based on the drawings. 3. Materials and supplies are estimated and costed based on working drawings and specifications. |
| 3.Set-out building super structure | 1. ***Personal Protective Equipment*** is identified and used in line with occupational safety and health regulations. 2. ***Masonry tools and equipment*** are used and maintained based on manufacturer’s instructions. 3. ***Preliminary preparation activities*** are carried out as per drawings and standard procedures 4. ***Reference points*** are located on the floor slab as per drawings. 5. Measurements are transferred from profile boards to the floor slab according to drawings and standard procedures. 6. Measurement and square-ness are checked based on standard procedure. 7. Profile lines are marked on the floor slab according to the drawings. 8. Column kickers are casted as per the standard procedures 9. Wall screeding is done as per working drawings and specification. 10. Masonry tools and equipment are maintained and stored based on manufacturer’s instructions and best practice. |
| 4.Prepare, position and cast columns | 1. Measurements are transferred to the floor slab based on specifications. 2. Formwork is prepared and positioned based on working drawings and standard procedure. 3. Reinforcement bars are prepared and positioned based on working drawings and based on specifications. 4. Columns are casted based on working drawings and specifications. 5. Columns vertical alignment is checked as per standard procedures. 6. Columns are cured as per standard procedure. |
| 5.Construct super-structure walling | 1. ***Superstructure walling units*** are identified based on specifications. 2. Wall openings are marked based on working drawings and specifications. 3. Masonry in-fills are constructed as per working drawings and best practice. 4. Masonry works horizontal and vertical alignment is checked as per standard procedures. 5. Masonry in-fills are cured as per standard procedure. |
| 1. Construct suspended floor slab and beams | 1. Measurements for the ***floor slab(s)*** and the beams are transferred from the reference point and marked as per working drawing. 2. Formwork is prepared and positioned based on working drawings and standard procedure. 3. Reinforcement bars are prepared, positioned and fixed based on working drawings and based on specifications. 4. Beams and slabs are casted based on working drawings and specifications. 5. Slab and beams levelness and horizontal alignment is checked as per standard procedures. 6. Slab and beams are ***cured*** as per standard procedure. |

**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. Working drawings may include but not limited to: | * Architectural drawings * Structural * MEP drawings * Site development drawings * Survey maps |
| 1. Supplies and Materials may include but not limited to: | * Ballast * Sand * Cement * Additives * Water * Timber * Scaffolds * Used oil * Binding wire * Deformed Steel Bars * Damp proof course * Lime * Chalk * Nails * Strings * BRC * Poles |
| 1. Personal Protective   Equipment may include but not limited to: | * Hard hat / helmet * Dust Mask * Goggles * Ear plugs / ear muffs * Dust coat / coverall * Gloves * Safety boots * Gum boots * Reflector jackets |
| 1. Masonry tools and equipment may include but not limited to: | * Mason square * Spirit level * Plumb bob * Trowels * Spades * Wheel barrow * Dumper * Mason string * Straight edge * Float * Concrete mixer * Dumpy level * Vibrator * Compactor * Hammer * Bend bar * Mattock * Machete * Sledge Hammer * Buckets * Mixing platform * Hose Pipe |
| 1. Preliminary preparation activities may include but not limited to: | * Ground floor slab preparation   + Cleaning   + Watering   + Hacking * Wall screeding * Kickers preparation |
| 1. Reference points may include but not limited to: | * Datum * Building line * Temporary bench mark (TBM) * Profile boards |
| 1. Superstructure walling units may include but not limited to: | * Dressed quarry stones * Common bricks * Concrete blocks * Machine cut stones |
| 1. Slabs may include but not limited to: | * Suspended hollow pots * Suspended solid slab * Waffled slab * Inclined/stairs |
| 1. Damp proofing may include but not limited to: | * Damp Proofing Membrane * Damp Proof Spray * Waterproofing additives * Bituminous |
| 1. Curing may include but not limited to: | * Water spraying * Jute sacks * Blankets * Sand * Pool curing * Curing agents |

**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:

* Interpersonal
* Communication
* Drawing
* Interpretation of working drawings
* Problem-solving
* Critical thinking
* Organizing
* Measuring
* Numeracy
* Mortar handling
* Concrete materials mixing
* Masonry units handling
* Tool and equipment handling
* Team work
* Time management

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Interpretation of drawings and symbols
* Estimate and cost
* Conversion of units
* Measurement
* Safety and access
* Scaffold erection and dismantling
* Square-nesschecking techniques
* Concrete mix ratios (Batching)
* Aggregates
* Additives
* Damp proofing materials
* Cement types and uses
* Types of suspended slabs and applications
* Types of timber
* Water
* Concreting
* Formwork
* Levelling
* Structural alignment
* Steel reinforcement fixing
* Masonry units
* Masonry works curing
* Use and maintenance of tools and equipment
* Curing

**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. Identified working drawings correctly***.*** 2. Read drawing scale correctly. 3. Converted measurements accurately. 4. Identified symbols correctly. 5. Identified masonry materials, supplies, tools and equipment correctly. 6. Prepared schedule of materials and supplies appropriately. 7. Estimated and costed materials and supplies accurately. 8. Identified appropriate personal protective equipment. 9. Used personal protective equipment correctly. 10. Used and maintained masonry tools and equipment appropriately. 11. Carried out preliminary preparation activities appropriately. 12. Located reference points on the ground floor accurately. 13. Transferred measurements form profile boards to the ground floor accurately. 14. Checked measurement and square-ness correctly. 15. Marked profile lines on the ground floor accurately. 16. Maintained and stored masonry tools and equipment appropriately. 17. Prepared ground floor slab appropriately. 18. Laid wall screeding layer correctly. 19. Laid damp proofing appropriately. 20. Prepared and positioned column formwork accurately. 21. Prepared and positioned column reinforcement bars accurately. 22. Casted columns correctly. 23. Cured columns adequately 24. Identified superstructure in-fill walling units correctly. 25. Laid superstructure walling units correctly. 26. Prepared, positioned and fixed suspended floor slab and beams formwork accurately. 27. Fixed and positioned suspended floor slab and beams reinforcement accurately. 28. Casted concrete suspended floor slab and beams appropriately. 29. Cured concrete suspended floor slab and beams appropriately. 30. Demonstrated understanding of construction of building super-structure. |
| 2. Resource  implications | The following resources must be provided:  2.1 A functional workshop with basic masonry tools, equipment, materials and supplies.  2.2 References and manuals including construction working drawings  2.3 Personal protective equipment |
| 3. Methods of  Assessment | Competency may be assessed through:  3.1 Observation  3.2 Oral  3.3 Written  3.4 Portfolio  3.5project  3.6Third party report |
| 4. Context of  Assessment | Assessment may be done:  4.1 On-the-job,  4.2 Off-the-job or  4.3 During Work placement. |
| 5. Guidance information for assessment | The unit may be assessed alone or together with other related units. |

# FINISH MASONRY WORKS

**UNIT CODE:** CON/OS/MA/CR/03/4/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to finish masonry works. It involves interpreting working drawings, estimating and cost materials and supplies, applying plaster and render walls, laying floor screed, applying tile and terrazzo finishing, jointing and pointing masonry wallsand facing masonry walls

This standard applies in the Construction industry.

|  |  |
| --- | --- |
| **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. Interpret working drawings | 1. ***Working drawings*** are identified based on their features and title block***.*** 2. Scale of the drawing is read based on the drawing. 3. Measurements are converted based on best practice. 4. Symbols are identified based on working drawings standards. |
| 2. Estimate and cost materials and supplies | 1. ***Materials and supplies*** required for finishing masonry works are identified based on the working drawings and specifications. 2. Schedule of materials and supplies is prepared based on the drawings and specifications 3. Materials and supplies are estimated and costed based on working drawings and specifications. |
| 3. Apply plaster and render walls | 1. Required ***tools and equipment*** for finishing masonry works are identified and used based on the working drawings and specifications. 2. Required ***PPEs*** are identified and used based on job requirements. 3. 2.3 ***Wall surface is prepared*** based on its condition and job requirements. 4. 2.4 Mortar mix is prepared as per specification and working drawing. 5. 2.5 Dot guides are laid, plumbed and aligned as per standard procedure. 6. Plastering and rendering are applied as per specification and standard procedure. 7. Plastered and rendered surfaces are cured as per standard procedure. |
| 4. Lay floor screed | 1. Floor surface is prepared based on its condition and job requirements. 2. Mortar mix is prepared as per specification and working drawing. 3. Dot guides are laid, levelled and aligned as per standard procedure. 4. Screed is applied as per specification and standard procedure. 5. Screed floor surfaces is cured as per specification and standard procedure. |
| 5. Apply tile and terrazzo finishing | 1. ***Surface is prepared*** based on its condition and job requirements. 2. Terrazo mortar mix is prepared as per specification and working drawing. 3. Groutfor tiling is prepared as per specification and working drawing. 4. ***Reference points*** are marked on the wall as per specification and standard procedure. 5. Terrazo is applied as per specification and standard procedure. 6. Finished surfaces are cured as per specification and standard procedure 7. Terrazo surface issmoothenedas per specification and standard procedure. 8. Tiles are applied as per specification and standard procedure. 9. Tile joints are grouted as per specification and standard procedure. |
| 6. Joint and point masonry walls | 1. Wall surface is prepared based on its condition and job requirements. 2. Mortar mix is prepared as per specification and working drawing. 3. Jointing and pointing is done as per specification and standard procedure. 4. Joints are checked for plumpness, vertical and horizontal alignment as per standard procedure. 5. Pointing is checked for vertical and horizontal alignment as per standard procedure. 6. Curing is per standard procedure. |
| 7.Face masonry walls | 1. ***Facing materials and supplies*** are identified based on working drawings and specifications. 2. Wall surface is prepared based on its condition and job requirements. 3. Mortar mix is prepared as per specification and working drawing. 4. Facing is fixed as per specification and standard procedure. 5. Faced wall is checked for plumpness and alignment as per standard procedure. 6. Faced wall is ***cured*** as per standard procedure. |

**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. Working drawings may include but not limited to: | * Architectural drawings * MEP drawings * Site development drawings /landscape architectural drawings |
| 1. Supplies and Materials may include but not limited to: | * Ballast * Sand * Cement * Additives * Water * Timber * Scaffolds * Lime * Chalk * Nails * Strings * Poles |
| 1. Personal Protective Equipment may include but not limited to: | * Hard hat / helmet * Dust Mask * Goggles * Ear plugs / ear muffs * Dust coat / coverall * Gloves * Safety boots * Gum boots * Reflector jackets |
| 1. Masonry tools and equipment may include but not limited to: | * Mason square * Spirit level * Plumb bob * Trowels * Terrazo grinder * Spatter dash * Spades * Wheel barrow * Dumper * Mason string * Straight edge * Float * Concrete mixer * Dumpy level * Key * Compactor * Assorted hammer * Mattock * Chisel * Machete * Sledge Hammer * Buckets * Mixing platform * Hose Pipe * Hawk * Scrapper |
| 1. Surface preparation activities may include but not limited to: | * Cleaning * Watering * Hacking |
| 1. Reference points may include but not limited to: | * Datum * Temporary bench mark (TBM) |
| 1. Curing may include but not limited to: | * Water spraying * Jute sacks * Blankets * Sand * Pool curing * Curing agents |
| 1. Facing materials and supplies may include but not limited to: | * Tiles * Mazeras * Bricks * Wood * Natural stones * Slates * Artificial moulds |

**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:

* Interpersonal
* Communication
* Drawing
* Interpretation of working drawings
* Problem-solving
* Critical thinking
* Organizing
* Measuring
* Numeracy
* Mortar handling
* Concrete materials mixing
* Masonry units handling
* Tool and equipment handling
* Team work
* Time management

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Interpretation of drawings and symbols
* Estimate and cost
* Conversion of units
* Measurement
* Safety and access
* Scaffold erection and dismantling
* Square-nesschecking techniques
* Finishing techniques
* Terrazo mix ratios
* Aggregates
* Additives
* Damp proofing materials
* Cement types and uses
* Types of timber
* Water
* Formwork
* Levelling
* Structural alignment
* Facing masonry units
* Finishing works curing
* Use and maintenance of tools and equipment
* Interpretation of symbols
* Type of rendering and its application

**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. Identified working drawings correctly***.*** 2. Read drawing scale correctly. 3. Converted measurements accurately. 4. Identified symbols correctly. 5. Identified masonry materials, supplies, tools and equipment correctly. 6. Prepared schedule of materials and supplies appropriately. 7. Estimated and cost materials and supplies accurately. 8. Identified appropriate personal protective equipment. 9. Used personal protective equipment correctly. 10. Used and maintained masonry tools and equipment appropriately. 11. Carried out preliminary preparation activities appropriately. 12. Located reference points on the wall accurately. 13. Prepared wall surface appropriately. 14. Laid, plumbed and aligned plaster dot guides accurately. 15. Applied plaster and render appropriately. 16. Cured plastered and rendered surfaces correctly. 17. Prepared floor surface appropriately. 18. Prepared mortar mix appropriately. 19. Laid, levelled and aligned screed dot guides correctly. 20. Applied floor screed appropriately. 21. Cured screed floor surfaces correctly. 22. Prepared wall or floor surface for tiling and terrazzo application appropriately. 23. Prepared terrazzo mortar mix accurately. 24. Prepared tiling grout correctly. 25. Marked wall reference points accurately. 26. Applied terrazzo finish appropriately. 27. Cured finished surfaces appropriately. 28. Smoothened terrazzo surface effectively. 29. Applied tiles correctly. 30. Grouted tile joints correctly. 31. Jointed and pointed masonry walls correctly. 32. Plumbed and aligned joints and points correctly. 33. Identifiedfacing materials and suppliescorrectly. 34. Fixed masonry wall facings correctly. 35. Plumbed and aligned masonry wall facings correctly. 36. Cured faced masonry wall appropriately. 37. Demonstrated understanding of masonry works finishes. |
| 1. Resource Implications for competence certification | The following resources must be provided:  2.1A functional workshop with appropriately masonry tools, equipment, materials and supplies.  2.2References and manuals including construction working drawings  2.3Personal protective equipment |
| 1. Methods of Assessment | Competency may be assessed through:  3.1Observation  3.2Oral  3.3Written  3.4Third party report  3.5Portfolio |
| 1. Context of Assessment | Assessment may be done:  4.1On-the-job,  4.2Off-the-job or  4.3During Work placement. |
| 1. Guidance Information for Assessment | The unit may be assessed alone or together with other related units. |

# PRODUCE MASONRY CONSTRUCTION UNITS

**UNIT CODE:** CON/OS/MA/CR/04/4/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to produce masonry construction units. It entails interpreting working drawings, estimating and costing materials and supplies, producing clay masonry units, concrete masonry units, hand dressed stones and stabilized soil masonry units

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This standard 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.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Interpret working drawings | 1. Working drawings are identified based on their features and title block***.*** 2. Scale of the drawing is read based on the drawing. 3. Measurements are converted based on best practice. 4. Symbols are identified based on working drawings standards. |
| 2. Estimate and cost materials and supplies | 1. ***Materials and supplies*** required for production of construction units are identified based on the working drawings and specifications. 2. Schedule of materials and supplies is prepared based on the drawings and specifications. 3. Materials and supplies are estimated and costed based on working drawings and specifications. |
| 3.Produce clay masonry units | 1. Required ***tools and equipment*** for production of clay masonry units are identified based on the working drawings and specifications. 2. Tools and equipment are used and maintained based on manufacturers’ instructions. 3. Required ***PPEs*** are identified and used based on job requirements and manufacturers’ instructions. 4. Materials and supplies for production of clay masonry units are identified based on specifications. 5. Clay mix is prepared based on best practice. 6. Clay moulds are assembled and prepared as per standard procedure. 7. Moulding is carried out and products allowed to dry as per standard procedure. 8. Dry products are arranged in a kiln in readiness for firing as per best practice. 9. Firing is carried out as per best practice. 10. ***Fired clay products*** are harvested, sorted and stored as per best practice. |
| 4. Produce concrete masonry units | 1. Required ***tools and equipment*** for production of concrete masonry units are identified based on the working drawings and specifications. 2. Tools and equipment are used and maintained based on manufacturers’ instructions. 3. Required ***PPEs*** are identified and used based on job requirements and manufacturers’ instructions. 4. Materials and supplies for production of concrete masonry units are identified based on specifications. 5. Concrete mix is prepared based on specifications. 6. Concrete moulds are assembled and prepared as per standard procedure. 7. Moulding is carried out and productscuredas per standard procedure. 8. ***Concrete masonry units*** are sorted, arranged and stored as per best practice. |
| 1. Produce hand dressed stones | 1. Required ***tools and equipment*** for production of hand dressed masonry units are identified based on the working drawings and specifications. 2. Tools and equipment are used and maintained based on manufacturers’ instructions. 3. Required ***PPEs*** are identified and used based on job requirements and manufacturers’ instructions. 4. Stones for production of hand dressed masonry units are identified based on specifications. 5. Stones are dressed based on working drawings and specifications. 6. Dressed stones are sorted based on size and job requirements |
| 1. Produce stabilized soil masonry units | 1. Required ***tools and equipment*** for production of stabilized soil masonry units are identified based on the working drawings and specifications. 2. Tools and equipment are used and maintained based on manufacturers’ instructions. 3. Required ***PPEs*** are identified and used based on job requirements and manufacturers’ instructions. 4. Moulding machine/boxes are assembled and prepared based on standard procedure. 5. Materials are mixed based on best practice and job specification. 6. ***Stabilized soil masonry units*** are moulded, arranged and cured as per standard procedure. 7. Stabilized soil masonry units are sorted based on quality. |

**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. Supplies and Materials may include but not limited to: | Clay masonry units   * Water * Clay soil * Grass * Used oil * Moulds   Concrete masonry units   * Ballast * Quarry dust * Cement * Sand * Water * Wire mesh * Reinforcement bars * Mould * Used oil   Stabilized soil masonry units   * Cement * Water * Soil * Sisal * Mould * Used oil   Quarry stones   * Bush * Smooth * medium |
| 1. Masonry tools and equipment | * Mason square * Trowels * Spades * Wheel barrow * Dumper * Float * Hawk * Concrete mixer * Vibrator * Compactor * Hammer * Mattock * Machete * Buckets * Mixing platform * Hose Pipe * Drum * Moulding boxes * Molding machine * Chisels |
| 1. Personal protective   equipment may include but not limited to: | * Hard hat / helmet * Dust mask * Goggles * Ear plugs / ear muffs * Dust coat / coverall * Gloves * Safety boots * Gum boots * Reflector jackets |
| 1. Concrete masonry units may include but not limited to: | * Paving slabs * Channels * Culverts * Roads kerbs * Wall vents * Vent blocks * Hollow blocks * Solid blocks * Concrete posts * Bollards * Balustrades * Interlocking blocks |
| 1. Fired clay units may include but not limited to: | * Roofing tiles * Wall tiles * Window sills * Bricks * Vents * Louvers |
| 1. Stabilized soil masonry units may include but not limited to: | * Interlocking blocks * Blocks |

**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:

* Interpersonal
* Communication
* Drawing
* Interpretation of working drawings
* Problem-solving
* Critical thinking
* Organizing
* Measuring
* Numeracy
* Mortar handling
* Clay mixing and blending
* Mould assembling and preparing
* Soil mixing and blending
* Time management
* Time work
* Concrete materials mixing
* Masonry units handling
* Moulding masonry units
* Tool and equipment handling

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Interpretation of drawings and symbols
* Estimate and cost
* Conversion of units
* Measurement
* Safety
* Materials properties
* Mouldassembling and dismantling
* Moulding masonry units techniques
* Finishing techniques
* concrete
* Aggregates
* Soil types
* lime
* Cement types and uses
* Water
* curing of finished masonry units
* Use and maintenance of tools and equipment
* Type of masonry units and its application
* Extraction of materials

**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. Identified features correctly 2. Read Scaled drawing accurately. 3. Converted Measurements correctly 4. Identified working drawings Symbols appropriately 5. Identified Materials and supplies required correctly 6. Prepared Schedule of materials and supplies correctly 7. Estimated and costed Materials and supplies accurately 8. Identified required tools and equipment for production of clay masonry units correctly 9. Used and maintained Tools and equipment appropriately 10. Identified and used Required PPEs appropriately 11. Identified Materials and supplies for production of clay units correctly 12. Prepared and mixed clay accurately. 13. Prepared and assembled Clay mould appropriately 14. Moulded and dried clay products appropriately 15. Arranged dried products are in a kiln correctly 16. Fired clay products appropriately 17. Harvested, sorted and stored Fired clay products appropriately. 18. Identified tools and equipment required for production of concrete masonry units correctly 19. Identified Materials and supplies for production of concrete masonry units correctly. 20. Prepared and mixed concrete correctly. 21. Prepared and assembled concrete mould appropriately 22. Moulded and cured concrete products correctly 23. Sorted, arranged and stored Concrete masonry products appropriately 24. Identified tools and equipment required for production of hand dressed masonry units correctly 25. Identified Stones for production of hand dressed masonry units correctly 26. Dressed Stones appropriately 27. Identified tools and equipment required for production of stabilized soil masonry units correctly 28. Prepared and assembled Moulding machine/boxes are appropriately. 29. Mixed Materials for stabilized soil masonry units correctly 30. Moulded, arranged and cured stabilized soil masonry units appropriately. 31. Sorted Stabilized soil masonry units appropriately 32. Demonstrated understanding of production of masonry construction units |
| 2. Resource Implications for competence certification | The following resources must be provided:  2.1 A functional workshop with basic masonry tools, equipment, materials and supplies.  2.2 References and manuals including construction working drawings  2.3 Personal protective equipment |
| 3. Methods of Assessment | Competency may be assessed through:  3.1 Observation  3.2 Oral  3.3 Written  3.4 Third party report  3.5 Portfolio |
| 4. Context of Assessment | Assessment may be done:  4.1 On-the-job,  4.2 Off-the-job or  4.3 During Work placement. |
| 5. Guidance information for assessment | The unit may be assessed alone or together with other related units. |