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**MINISTRY OF EDUCATION**

**NATIONAL OCCUPATIONAL STANDARDS**

**FOR**

**BUILDING TECHNICIAN**

**LEVEL 5**

**PROGRAMME CODE: 0732 454 A**

# 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 this Occupational Standard has been developed for informing development of a competency-based building technician Level 5 Curriculum. This Occupational Standard will also form the basis for assessment of an individual for competency certification.

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

**CABINET SECRETARY**

**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 toreform curriculum development, assessment and certification. This called for a 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 industry in conjunction with national polytechnics and other national agencies have developed this Building technician Level 5 Occupational Standard. The Standard is designed and organized with clear performance criteria for each element of a unit of competency. It also outlines the required knowledge and skills for the performance of prescribed tasks as well as evidence guide for assessment purposes.

**PRINCIPAL SECRETARY**

**VOCATIONAL AND TECHNICAL TRAINING MINISTRY OF EDUCATION**

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# ABBRREVIATIONS AND ACRONYMNS

CBET Competency Based Education and Training

EMCA Environmental Management and Coordination Act

NEMA National Environmental Management Authority

POE Portfolio of Evidence

KCSE Kenya Certificate of Secondary Education

OSHA Occupation Safety and Health Act

PPE Personal Protective Equipment

TVET Technical and Vocational Education and Training

# KEY TO UNIT CODE

**Sector / Industry**

**Sub Sector**

**Occupational Area**

**Version Control**

**Unit of Competence Number**

**ISCED level, Programme Orientation and Level of Completion**

xx

x

xxx

x

x

x

# OVERVIEW

**BASIC UNITS**

|  |  |
| --- | --- |
| 0031 451 07A | Apply Communication Skills |
| 0417 451 13A | Apply Work Ethics and Practices |

**COMMON UNITS OF COMPETENCY**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| 0732 351 04A | Apply Workplace Essential Skills |
| 0541 451 08A | Apply Basic Mathematics I |
| 0732 451 09A | Apply Technical Drawing |
| 0541 451 14A | Apply Basic Mathematics II |
| 0732 451 15A | Apply Construction Material Science |

**CORE UNITS OF COMPETENCY**

|  |  |
| --- | --- |
| **UNIT CODE** | **CORE UNITS OF COMPETENCY** |
| 0732 251 01A | Perform Masonry Works |
| 0732 251 02A | Perform Masonry Works Finishes I |
| 0732 251 03A | Produce Masonry Products |
| 0732 351 05A | Perform Building Site Preliminary Works |
| 0732 351 06A | Perform Building Temporary Works |
| 0732 451 10A | Perform Building Substructure Works |
| 0732451 11A | Install Doors and Windows |
| 0732451 12A | Execute External Works |
| 0732 451 16A | Perform Building Superstructure Works |
| 0732 451 17A | Perform Masonry Works Finishes II |

# BASIC UNITS

## APPLY COMMUNICATION SKILLS

**UNIT CODE: 0031 541 07A**

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate communication skills. It involves applying communication channels, written, non-verbal, oral, and group communication skills.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT**  These describe the key outcomes that make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements that specify the required level of performance for each of the elements  ***Bold and italicized terms are elaborated in the Range*** |
| --- | --- |
| 1. Apply communication channels | 1. Specific communication channels are identified and applied based on workplace requirements 2. Challenges are identified and addressed as per the operational standards of the organization 3. Communication channels are evaluated to meet workplace needs |
| 1. Apply written communication skills | * 1. Types of written communication are identified and applied according to the workplace requirements   2. Written communication needs are identified and implemented according to workplace procedures   3. Written communication guidelines are analysed, evaluated, and revised based on workplace needs |
| 1. Apply non-verbal communication skills | * 1. Existing non-verbal communication techniques are identified based on organization policy   2. Existing non-verbal communication techniques are applied based on organization policy   3. Non-verbal communication techniques are articulated to enhance inclusivity according to workplace requirement   4. Non-verbal communication techniques are modelled to enhance inclusivity according to workplace requirement |
| 1. Apply oral communication skills | * 1. Types of oral communication are identified and established as per organization policy   2. Pathways of oral communication are identified and established as per organization policy   3. Pathways of oral communication are reviewed according to organization procedures.   4. Pathways of oral communication are maintained according to the organization standards. |
| 1. Apply group communication skills | * 1. Group communication strategies are appliedbased on the workplace needs   2. Groups are organized in accordance with workplace procedures   3. Effective questioning, listening and non-verbal communication techniques are used as per needs.   4. Group communication challenges are identified and addressed according to the workplace needs |

**RANGE**

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

| **Variable** | **Range** |
| --- | --- |
| 1. Communication strategies may include but are not limited to: | * Language switch * Comprehension check * Repetition * Asking confirmation * Paraphrasing * Clarification request * Translation * Restructuring * Generalization |
| 1. Effective group interaction may include but not limited to: | * Identifying and evaluating what is occurring within an interaction in a non-judgmental way. * Using active listening * Making decision about appropriate words, behaviour * Putting together response which is culturally appropriate * Expressing an individual perspective * Expressing own philosophy, ideology and background and exploring impact with relevance to communication |
| 1. Situations may include but are not limited to: | * Establishing rapport * Eliciting facts and information * Facilitating resolution of issues * Developing action plans |

**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:

* Active listening
* Interpretation
* Negotiation
* Writing
* Oral skills
* Creative thinking
* Critical thinking
* Decision making
* Analytical
* Innovation
* Conflict skills
* Leadership
* Problem solving skills
* Management
* Organizational
* Teamwork

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Communication process
* Dynamics of groups
* Styles of group leadership
* Key elements of communications strategy
* Principles of effective communication
* Turn-taking techniques
* Conflict resolution techniques
* Work planning
* Work organization
* Company policies
* Company operations and procedure standards
* Fundamental rights at the workplace
* Personal hygiene
* Accountability
* Workplace problems and how to deal with them

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified and applied specific communication channels based on workplace requirements   2. Identified and applied specific written communication correspondence according to the workplace requirements.   3. Applied and developed non-verbal strategies to communicate in all areas of the workplace requirements.   4. Established pathways of oral communication as per workplace policy   5. Applied group communication strategies based on workplace needs. |
| 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.   3. Resources relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   * 1. Observation   2. Oral assessment   3. Portfolio of evidence   4. Interviews   5. Third party report   6. Written assessment   7. Practical assessment   8. Projects |
| 1. Context of Assessment | Competency may be assessed:   * 1. On-the-job   2. In a simulated work environment |
| 1. 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended |

## APPLY WORK ETHICS AND PRACTICES

**UNIT CODE: 0417 541 13A**

**UNIT DESCRIPTION**

This unit covers competencies required to demonstrate employability skills. It entails conducting self-management skills, promoting ethical work practices and values, promoting teamwork, maintaining professional and personal development, applying problem-solving skills and promoting customer care.

**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 Range*** |
| --- | --- |
| 1. Apply self-management skills | 1. Personal vision, mission and goals are formulated based on potential and concerning organization objectives and strategic plan 2. Self-esteem and a positive self-image are developed and maintained based on value 3. Emotional intelligence and stress management are demonstrated as per workplace requirements 4. Assertiveness is developed and maintained based on the requirements of the job. 5. Accountability and responsibility for one's actions are demonstrated based on workplace instructions 6. Time management, attendance and punctuality are observed as per the organization’s policy 7. Personal goals are managed as per the organization’s objective 8. Self-strengths and weaknesses are identified based on personal objectives 9. Motivation, initiative and proactivity are utilized as per the organization policy 10. Individual performance is evaluated and monitored according to the agreed targets |
| 1. Promote ethical work practices and values | * 1. Integrity is demonstrated as per acceptable norms   2. Codes of conduct is applied as per the workplace requirements   3. Policies and guidelines are observed as per the workplace requirements   4. Professionalism is exercised in line with organizational policies |
| 1. Promote Team work | * 1. Teams are formed to enhance productivity based on organization’s objectives   2. Duties are assigned to teams under the organization policy   3. Team activities are managed and coordinated as per set objectives   4. Team performance is evaluated based on set targets as per workplace policy   5. Conflicts are resolved between team members in line with organization policy.   6. Gender and diversity-related issues are identified and mainstreamed in accordance with workplace policy   7. Healthy relationships are developed and maintained in line with the workplace.   8. Adaptability and flexibility are applied in dealing with team members as per workplace policies |
| 1. Maintain professional and personal development | * 1. Personal growth and development needs are identified and assessed in line with the requirements of the job   2. Training and career opportunities are identified and utilized based on job requirements   3. Resources for training are mobilized and allocated based on organizations and individual skills needs   4. Licenses and certifications relevant to the job and career are obtained and renewed as per policy   5. Recognitions are sought as proof of career advancement in line with professional requirements   6. Work priorities and personal commitments are balanced and managed based on the requirements of the job and personal objectives   7. Dynamism and on-the-job learning are embraced in line with the organization’s goals and objectives |
| 1. Apply Problem solving skills | * 1. Creative, innovative and practical solutions are developed based on the problem   2. Independence and initiative in identifying and solving problems are demonstrated based on the requirements of the job.   3. Team problems are solved as per the workplace guidelines   4. Problem-solving strategies are applied as per the workplace guidelines   5. Problems are analysed and assumptions tested as per the context of data and circumstances |
| 1. Promote Customer Care | 6.1 Customers' needs are identified based on their characteristics  6.2 Customer ***feedback*** is allowed and facilitated in line with organization policies  6.3 Customer concerns and complaints are analysed and resolved in line with the set organizational culture  6.4 Proactive customer outreach programs are implemented as per organizational policies  6.5 Customer retention strategies are developed and implemented in line with the organizational policy |

**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. Feedback may include but not limited to: | * Verbal * Written * Informal * Formal |
| 1. Conflicts include but are not limited to: | * Interpersonal Conflict * Intrapersonal Conflict * Intergroup Conflict * Intragroup Conflict |
| 1. Relationships may include but not limited to: | * Man/Woman * Trainer/trainee * Employee/employer * Client/service provider * Husband/wife * Boy/girl * Parent/child * Sibling relationships |
| 1. Team may include but not limited to: | * Small work group * Staff in a section/department * Inter-agency group * Virtual teams |
| 1. Personal growth may include but not limited to: | * Growth in the job * Career mobility * Gains and exposure the job gives * Net workings * Benefits that accrue to the individual as a result of noteworthy performance |
| 1. Personal objectives may include but not limited to: | * Long term * Short term * Broad * Specific |
| 1. Trainings and career opportunities may include but not limited to | * Participation in training programs * Serving as Resource Persons in conferences and workshops * Capacity building |
| 1. Resource may include may but not limited to: | * Human * Financial * Technology |
| 1. Creative and innovative may include but not limited to: | * New ideas * Original ideas * Different ideas * Methods/procedures * Processes * New tools |
| 1. Emerging issues may include but not limited to: | * Artificial Intelligence * Data confidentiality * National cohesion * Open offices |

**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:

* Active listening
* Critical thinking
* Organizational
* Negotiation
* Monitoring
* Evaluation
* Problem solving
* Decision Making
* Leadership
* Creative/innovative thinking
* Adaptability
* Conflict management
* Emotional intelligence
* Teamwork

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Work values and ethics
* Company policies and procedures
* Company operations, procedures and standards
* Flexibility and adaptability
* Concept of time and leisure time
* Decision making
* Work planning
* Organizing work
* Monitoring and evaluation
* Record keeping
* Gender and diversity mainstreaming
* Drug and substance abuse
* Professional growth and development
* creativity
* Innovation
* problem solving
* customer care
* Mentoring and coaching.
* Emerging 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 require evidence that the candidate:   * 1. Applied self-management skills as per organizational procedures   2. Promoted ethical practices and values as per organizational procedures   3. Promoted Teamwork as per workplace assignments   4. Maintained professional and personal development as per organizational procedures   5. Applied Problem-solving skills based on work requirements.   6. Identified customer needs based on their characteristics   7. Gave back Customer feedback in line with organization policies |
| 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. 3. Resources relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation 2. Oral questioning 3. Written test 4. Portfolio of Evidence 5. Interview 6. Third party report |
| 1. Context of Assessment | Competency may be assessed:   1. On-the-job 2. In a simulated work environment |
| 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

## APPLY WORKPLACE ESSENTIAL SKILLS

**UNIT CODE: 0417 351 04A**

**UNIT DESCRIPTION**

This unit describes the competence required to workplace essential skills. It entails; demonstrating communication skills, ethical work practices and values and applying entrepreneurial skills.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT**  These describe the key outcomes that make up workplace function | **PERFORMANCE CRITERIA**  These assessable statements specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| --- | --- |
| 1. Demonstrate Communication Skills | * 1. Specific communication processes are identified based on workplace requirements.   2. Identified organizational policies in accordance with workplace requirements.   3. Workplace ethics are identified based on workplace requirements.   4. Grooming is observed based on the workplace policy.   5. ***Group discussion techniques*** are applied based on workplace needs. |
| 1. Demonstrate ethical work practices and values | 1. Ethical work practices and values are observed as per workplace policy. 2. Personal management is observed as per the workplace requirements 3. Integrity is exercised in line with personal goals and organizational policies 4. Core values and beliefs are observed as per the workplace requirements 5. Professionalism is applied as per work place requirements 6. Teamwork is observed in line with organizational policy. 7. **Conflicts** are resolved between ***team*** members in line with organization policy. 8. ***Customer*** concerns and complaints are analyzed and resolved in line with the set organizational culture. |
| 1. Apply Entrepreneurial skills | 1. Entrepreneurial skills are applied as per principles of entrepreneurship. 2. ***Entrepreneurial roles and characteristics*** identified as per principles of Entrepreneurship 3. ***Requirements for entry into self-employment*** are identified according to business procedures and standards 4. ***Regulatory requirements*** when starting a small business are identified as per business procedures and standards 5. Business planning is undertaken as per resource implications and regulatory framework |

**RANGE**

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

| **Variable** | **Range** |
| --- | --- |
| 1. Written communication may include but not limited to: | * Memos * Letters * Notices * SMS |
| 1. Non-verbal strategies may include and not limited to: | * Posture * Gestures * Eye contact * Facial expressions * Dressing/Grooming |
| 1. Oral communication pathways may include and not limited to: | * Telephone calls * Face-to-face * Meetings * Interviews |
| 1. Group communication strategies may include but not limited to: | * Body language * Active listening * Concise language |
| 1. Conflicts include but are not limited to: | * Interpersonal Conflict. * Intrapersonal Conflict. * Intergroup Conflict. * Intragroup Conflict. |
| 1. Customer may include but not limited to: | * Loyal * Discount * Impulse * Need-based * Wandering |
| 1. Team may include but not limited to: | * Small workgroup * Staff in a section/department * Inter-agency Group * Virtual teams |
| 1. Creative and Innovation may include but are not limited to: | * New ideas * Original ideas * Different ideas * Methods/procedures * Processes * New tools |
| 1. Sources of personal finance mayinclude but are not limited to: | * Salary/Wages * Investments * Savings * Inheritance * Government Benefits |
| 1. Sources of business finance mayinclude but not limited to: | * Equity Financing * Debt Financing, * Personal Savings/Investment * Retained Earnings * Grants and Subsidies * Crowdfunding * Supplier credit: * Leasing and Asset Financing: |
| 1. Characteristics of Entrepreneurs may include but are not limited to: | * Creative * Innovative * Planner * Risk-taker * Networker * Confident * Flexible * Persistent * Patient * Independent * Future-oriented * Goal oriented |
| 1. Requirements for entry into self-employment may include but not limited to | * Technical skills * Management skills * Entrepreneurial skills * Resources * Infrastructure |
| 1. Legal requirements when starting a small business may include but not limited to: | * Business Registration * Business Name Registration * Business Permits and Licenses * Tax Registration * Compliance with Employment Laws |
| 1. Units of measurement may include but not limited to: | * 1. Millimetres   2. Centimetres   3. Inches   4. Feet |
| 1. Drawing materials may include but is not limited to: | * Drawing papers * Pencils * Erasers * masking tapes   paper clips |
| 1. Angles may include | * Right angles * Acute angles * Obtuse angles |
| 1. Geometric forms may include but is not limited to: | * Circles * Triangles * Rectangles * Parallelogram * Polygons * Pyramids * Ellipse * Parabola * Rhombus |

**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:

* Active listening
* Interpretation
* Negotiation
* Writing
* Decision making
* Problem solving skills
* Team work
* Responsibility skills
* Critical thinking
* Organizational
* Negotiation
* Monitoring
* Creative/innovative thinking
* Adaptability
* Conflict management
* Emotional intelligence
* Leadership
* Critical thinking
* Networking
* Basic financial management skills
* Creativity
* Analytical
* Management
* Problem-solving
* Communication

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Effective verbal communication methods
* Simple effective questioning techniques
* Workplace etiquette
* Work planning
* Personal hygiene
* Accountability
* Workplace problems and how to deal with them
* Work values and ethics
* Company policies and procedures
* Company operations, procedures and standards
* Flexibility and adaptability
* Concept of time and leisure time
* Decision making
* Work planning
* Organizing work
* Gender and diversity mainstreaming
* Professional growth and development
* Creativity
* Innovation
* Problem-solving
* Customer care
* Mentoring and coaching.
* Emerging issues
* Decision making
* Competition
* Budgeting
* Investment
* Personal financial management
* Risk
* Time management
* Market and feasibility studies
* Relevant developments in other industries

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   * 1. Effected written communication based on workplace requirements.   2. Exercised non-verbal communication as per workplace requirements.   3. Executed group discussion strategies as per workplace policy.   4. Promoted team work based on workplace requirements   5. Promoted work ethical practices and values as per work place requirements   6. Identified sources of personal and business finance as per financial procedures and standards   7. Undertook business planning as per resource implications and regulatory framework   8. Carried out mensuration as per the objects given   9. Was able to produce plain geometry drawings   10. Conducted freehand sketching of different types of geometric forms, tools, equipment, diagrams   11. Produced solid geometry drawings   12. Produced sketches of building sections   13. Produced sketches of building elevations |
| 1. Resource Implications | 1. Access to relevant workplace where assessment can take place 2. Materials, equipment and tools relevant to the proposed activity or tasks |
| 1. Methods of Assessment | * 1. Written tests   2. Observation   3. Oral questioning   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 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. |

## APPLY BASIC MATHEMATICS I

**UNIT CODE: 0732 451 08A**

**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. Carry out basic Mensuration | * 1. ***Units of measurement*** are identified as per the course requirements   2. Units are converted from one form to another as per mathematical concepts   3. Perimeters and areas of ***figures*** are obtained as per the correct formulae   4. Volume and surface area of solids are obtained as per the SOP   5. Area of irregular figures are obtained as per the sop |
| * 1. Apply basic arithmetic | * 1. Whole numbers and simple fractions, decimals   and percentages are identified and used as per the concept   * 1. Place value, ranges, rounding off are understood based on appropriate mathematical concepts   2. Arithmetic percentages and proportions are rationalized based on the concepts   3. Decimal and standard form are expressed in numbers as per concepts |
| * 1. Apply basic Algebra | * 1. Calculations involving Indices are performed as per the concept   2. Linear equations are represented based on the concept   3. Scientific calculator is used in solving mathematical problems in line with the manufacturer’s manual   4. Simultaneous equations are performed as per the rules   5. simple algebraic equations are solved as per the concept   6. Form simple algebraic equations as per the concept |
| * 1. Apply basic Statistics | 1. Grouped and ungrouped data is identified 2. Ungrouped data is organized as per the concept 3. Data in frequency tables is represented as per the category 4. Median of grouped and ungrouped data is calculated as per SOP 5. Data is represented in a chart form as per SOP 6. Data from a given chart is interpreted based on conventional methods |

**UNIT DESCRIPTION:**

This unit describes the competencies required in applying basic mathematics. It involves applying basic arithmetic, applying basic algebra, and applying trigonometry, performing geometrical calculations, carrying out mensuration, applying statistics and applying linear graphs.

**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. Units of measurement may include but not limited to: | * 1. Millimetres   2. Centimetres   3. Inches   4. Feet |
| 1. Figures may include but are not limited to: | * 1. Square   2. Rectangle   3. Triangle   4. Polygons   5. Circles |
| 1. Linear graphs may include but are not limited to: | * 1. Distance against time   2. Temperature against time   3. Velocity against distance |

**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:

* Applying fundamental operations (addition, subtraction, division, multiplication)
* Using and applying mathematical formulas
* Logical thinking
* Problem-solving
* Applying statistics
* Drawing graphs
* Using different measuring tool

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Fundamental operations (addition, subtraction, division, multiplication)
* Calculating area and volume
* Types and purpose of measuring instruments
* Units of measurement and abbreviations
* Rounding techniques
* Types of fractions
* Types of tables and graphs
* Presentation of data in tables and 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. Applied basic arithmetic as per the concept applied 2. Carried out mensuration as per the objects given 3. Solved simple algebraic equations as per the concept 4. Demonstrated knowledge of Applied statistics as per the concept required |
| 1. Resource Implications | The following resources should be provided:   * 1. Access to relevant workplace or appropriately simulated environment where assessment can take place   2. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Practical 2. Projects 3. Portfolio of evidence 4. Third party reports 5. Written tests |
| 1. Context of Assessment | The competency may be assessed in a workplace or a simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## APPLY TECHNICAL DRAWING

**UNIT CODE: 0732 451 09A**

**UNIT DESCRIPTION**

This unit covers the competencies required to prepare and interpret technical drawings. It involves competencies to select, use and maintain drawing equipment and materials. It also involves producing plain geometry drawings, solid geometry drawings, pictorial and orthographic drawings

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT** | **PERFORMANCE CRITERIA**  ***(Bold and italicised terms are elaborated in the Range)*** |
| --- | --- |
| 1. Select, use, and maintain drawing equipment and materials | 1. ***Drawing equipment*** are identified and gathered according to task requirements 2. ***Drawing materials*** are identified and gathered according to task requirements 3. Drawing equipment are used and maintained as per manufacturer’s instructions 4. Drawing materials are used as per job requirements 5. Waste materials are disposed of in accordance with the workplace procedures and ***environmental legislation.*** |
| 1. Produce plane geometry drawings | * 1. Different types of lines used in drawing and their meanings are identified according to standard drawing conventions   2. Different ***types of geometric*** forms are constructed according to standard conventions   3. Different types of angles are constructed according to principles of trigonometry   4. Different types of angles are measured using appropriate measuring tools   5. Angles are bisected according to standard conventions   6. Freehand sketching of different types of geometric forms, tools, equipment, diagrams is conducted |
| 1. Produce solid geometry drawings | 1. Drawings of patterns are interpreted according to standard conventions 2. Developed surfaces of truncated and un truncated regular solids |
| 1. Produce orthographic and pictorial drawings | 1. Symbols and abbreviations are identified and their meaning interpreted according to standard drawing conventions 2. First and third angle orthographic drawings are interpreted and produced in accordance with the standard conventions 3. Orthographic elevations are dimensioned in accordance with standard conventions 4. Isometric drawings are interpreted and produced in accordance with standard conventions 5. Oblique drawings are interpreted as per standard conventions |
| 1. Interpret building drawings | 1. Symbols and abbreviations are identified and their meaning interpreted according to standard drawing conventions 2. Dimensions and annotations are interpreted according to standard drawing conventions 3. Building section elements are interpreted as per working drawings specifications 4. Building elevations are interpreted as per working drawing specifications |

**RANGE**

| **Variable** | **Range** |
| --- | --- |
| 1. Drawing equipment may include but is not limited to: | * Drawing Boards * T And Set Squares * Drawing Sets, |
| 1. Drawing materials may include but is not limited to: | * Drawing Papers * Pencils * Erasers * Masking Tapes * Paper Clips |
| 1. Environmental legislations may include but is not limited to: | * Emca 1999 |

**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:

* Critical thinking
* Drawing
* Interpretation
* Drawing equipment handling
* Communication
* Interpersonal

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Drawing equipment and materials
* Freehand sketching
* Lettering
* Geometrical constructions
* Types of drawings
* Types of lines
* Isometric drawing conventions, features, characteristics, components
* Orthographic drawing conventions, features, characteristics, components
* Sketches and drawings of simple pattern.

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Selected, used, and maintained drawing equipment and materials appropriately 2. Was able to produce plain geometry drawings 3. Conducted freehand sketching of different types of geometric forms, tools, equipment, diagrams 4. Produced solid geometry drawings 5. Developed surfaces of truncated and un truncated regular solids 6. Produced pictorial and orthographic drawings correctly 7. Interpreted building symbols 8. Produced sketches of building sections 9. Produced sketches of building elevations |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2. Measuring equipment 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Practical tests   2. 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. |

## APPLY BASIC MATHEMATICS II

**UNIT CODE: 0732 451 14A**

**UNIT DESCRIPTION:**

This unit describes the competencies required in applying basic mathematics. It involves performing trigonometry calculations, performing geometric calculations and applying linear graphs.

**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. Perform Trigonometry calculations | * 1. Trigonometric calculations are identified based on trigonometric rules   2. Trigonometric rules are applied as per the concepts   3. Calculations are performed using trigonometric rules |
| * 1. Perform geometric calculations | 1. Identified geometrical figures based on context 2. Calculated areas of figures as per the given formulae 3. Apply Pythagoras’ theorem based on the concept |
| * 1. Apply linear graphs | 1. Given information is identified as provided in the data set or a problem 2. Appropriate scale is chosen based on quantities or variables 3. Axes are labelled based on appropriate labels 4. ***Linear graph*** is plotted based on the given set of data 5. Graph is analysed based on the graph drawn |

**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. Units of measurement may include but not limited to: | 1. Millimetres 2. Centimetres 3. Inches 4. Feet |
| 1. Figures may include but are not limited to: | 1. Square 2. Rectangle 3. Triangle 4. Polygons 5. Circles |
| 1. Linear graphs may include but are not limited to: | 1. Distance against time 2. Temperature against time 3. Velocity against distance |

**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:

* Applying fundamental operations (addition, subtraction, division, multiplication)
* Using and applying mathematical formulas
* Logical thinking
* Problem-solving
* Applying statistics
* Drawing graphs
* Using different measuring tool

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Fundamental operations (addition, subtraction, division, multiplication)
* Calculating area and volume
* Types and purpose of measuring instruments
* Units of measurement and abbreviations
* Rounding techniques
* Types of fractions
* Types of tables and graphs
* Presentation of data in tables and 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. Demonstrated ability to apply Trigonometry as per the concept 2. Performed Simultaneous equations as per the rules 3. Applied linear graphs as per the data set, quantities or variables provided |
| 1. Resource Implications | The following resources should be provided:   * 1. Access to relevant workplace or appropriately simulated environment where assessment can take place   2. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Practical 2. Projects 3. Portfolio of evidence 4. Third party reports 5. Written tests |
| 1. Context of Assessment | The competency may be assessed in a workplace or a simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## APPLY CONSTRUCTION MATERIAL SCIENCE

**UNIT CODE: 0732 451 15A**

**UNIT DESCRIPTION**

This unit describes the competence in applying Construction materials science. It involves identifying essential construction materials and their properties, selecting quality construction materials, testing construction material and handling and use of construction materials.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  This describes the key outcomes which make up workplace functions | **PERFORMANCE CRITERIA**  These are **assessable statements** which specify the required level of performance for each of the elements (to be stated in passive voice)  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Identify essential construction materials | * 1. Use of construction materials are identified based on its properties   2. Essential construction materials are identified based on construction requirements and project scope |
| 1. Identify properties of construction materials | * 1. ***Physical properties*** of construction materials are identified based on the type of construction material and codes of practice   2. ***Chemical properties*** of construction materials are identified based on the type of construction material and codes of practice   3. ***Mechanical properties*** of construction materials are identified based on the type of construction material and codes of practice |
| 1. Select quality construction materials | * 1. Cost implications of construction materials are evaluated and analyzed   2. Quality construction materials are selected based on their costs, availability and project requirements   3. Selection criteria recorded as per work place procedures |
| 1. Test construction materials | * 1. Construction materials are sampled randomly as per job requirement   2. ***Test parameters*** are identified as per the construction requirements and engineer’s instructions   3. Construction materials are tested as per the job requirement |
| 1. Handle construction materials | * 1. Construction materials to be handled are identified according to their uses   2. Safety requirements are identified based on the construction materials   3. Construction materials are handled safely based on the safety requirements |
| 1. Use construction materials | * 1. Construction materials, tools and equipment are assembled based on construction methods   2. construction materials are prepared based on purpose   3. Construction materials are used based on construction process |

**Range**

|  |  |
| --- | --- |
| **Variable** | **Range**  *May include but is not limited to:* |
| 1. Construction materials may include but not limited to: | * 1. Stones   2. Bricks   3. Clay and clay products   4. Lime   5. Cement   6. Timber and timber products   7. Metals and alloys   8. Paints and varnishes   9. Roofing materials   10. Aggregates   11. Glass and glass products   12. Bitumen and bituminous products |
| 1. Physical properties may include but are not limited to: | * 1. Porosity   2. Surface texture   3. Strength   4. Density   5. Thermal conductivity   6. Wear and tear |
| 1. Chemical properties may include but are not limited to: | * 1. Corrosion resistance   2. Chemical resistance |
| 1. Mechanical properties may include but not limited to: | * 1. Toughness   2. Hardness   3. Fatigue   4. Stress and strain   5. Creep and stress rapture   6. Strength |
| 1. Test parameters may include but not limited to: | * 1. Compression   2. Weathering   3. Durability   4. Water absorption   5. Impurity tests   6. Tensile tests   7. Workability   8. Plasticity   9. Aggregates crushing value   10. Optimum moisture content |

**SKILLS**

* Analytical
* Quality control analysis
* Complex problem solving
* Critical thinking
* Engineering drawings interpretation
* Monitoring
* Numeracy
* Communication

**REQUIRED KNOWLEDGE**

* Applied science
* Construction materials
* Materials testing
* Quality assurance
* Management of material resources
* Engineering mathematics
* Bills of quantities
* Materials handling safety procedures

**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 essential construction materials based on its properties   2. Selected quality construction materials based on their costs, availability and project requirements   3. Tested construction materials as per the construction requirements and engineer’s instructions   4. Identified properties of construction materials as per the type of construction material and codes of practice   5. Handled construction materialsbased on the safety requirements and type of materials |
| 1. Resource Implications | The following resources should be provided:   * 1. Access to relevant workplace or appropriately simulated environment where assessment can take place   2. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   * 1. Practical   2. Projects   3. Portfolio of evidence   4. Third party reports   5. Written tests |
| 1. Context of Assessment | The competency may be assessed in a workplace or a simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# 

# CORE UNITS OF COMPETENCY

## PERFORM MASONRY WORKS I

**UNIT CODE**: **0732 251 01A**

**Unit Description**

This unit specifies the competencies required to perform masonry works. It entails interpretation of drawings, setting out the building, laying of foundation concrete, construction of foundation walling, constructing superstructure wall, construct ground floor slab, construct reinforced concrete elements. It applies in the construction industry.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **Element** *These describe the key outcomes which make up workplace function* | **Performance Criteria**  *These are assessable statements, which specify the required level of performance for each of the elements.*  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Interpret Building drawings | * 1. Symbols are identified based on working drawings standards.   2. ***Measurements*** are interpreted in accordance with international standards.   3. ***Building elevations*** are identified based on type   4. ***Building sections*** are identified based on type |
| 1. Setting out Building | 1. ***Personal Protective Equipment*** is identified and used in line with occupational safety and health regulations manufacturer’s instructions. 2. ***Preliminary preparation activities*** are carried out as per drawings and standard procedures 3. ***Reference points*** are located on the ground as per drawings. 4. Profiles and profile boards are fixed and levelled on the ground according to drawings and standard procedures. 5. Measurement and square-ness are checked based on standard procedure. 6. Profile lines are fixed and marked on the ground according to the drawings. 7. Setting out tools and equipment are maintained and stored based on manufacturer’s instructions. 8. Over site excavation is carried out as per SOPs |
| 1. Lay building foundation concrete | * 1. ***Personal protective equipment*** are donned as per work requirement   2. ***Materials*** ***and tools*** are assembled as per work requirement   3. Excavation is carried out as per working drawing.   4. Preparation of foundation trenches is carried out as per working drawing.   5. Foundation trench is treated against termites as per manufacturer’s instruction.   6. Blinding is carried out as per work requirement. |
| 1. Construct foundation walls | * 1. Measurement transfer is performed based on working drawing.   2. ***Foundation*** ***walling units*** are laid as per working drawing.   3. Backfilling is performed as per the work requirement |
| 1. Construct ground floor slab | * 1. Personal protective equipment are donned as per work requirement   2. Hardcore is laid as per work requirement.   3. Murram blinding is laid as per work requirement.   4. Formwork is erected as per working drawing.   5. ***Damp proofing*** is carried out as per working drawing.   6. Concrete is casted according to working drawings.   7. Concrete slab is ***cured*** as per the job requirement. |
| 1. Construct reinforced concrete elements | * 1. Personal protective equipment are donned as per work requirement   2. Column concrete kicker is casted as per work requirement   3. ***Concrete elements*** are casted as per work requirement   4. Concrete elements are cured as per work requirement |
| 1. Construct superstructure walls | * 1. Personal protective equipment are donned as per work requirement   2. Damp Proof Course is laid as per working drawing   3. Masonry wall units are laid according to working drawing   4. ***Bridging of walls*** are constructed as per working drawing |

**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. Personal Protective Equipment may include but not limited to: | * Hard hat / helmet * Dust Mask * Goggles * Ear plugs / ear muffs * Dust coat / coverall * Gloves * Safety shoes / gum boots * Reflector jackets |
| * + - 1. Materials may include but not limited to: | * Ballast * Sand * Cement * Additives * Water * Timber * Deformed steel bars * Damp proofing materials and supplies * Lime * Chalk * Termite control chemicals * Hard core * Nails * Strings |
| * + - 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 * Vibrator * Compactor * Hammer * Mattock * Machete * Sledge Hammer * Buckets * Mixing platform * Hose Pipe |
| * + - 1. Foundation walling units may include but not limited to: | * Masonry blocks * Bricks |
| * + - 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 |
| * + - 1. Concrete elements may include but not limited to: | * Columns * Beams |
| * + - 1. Bridging of walls include but not limited to: | * Arches * Lintels |

**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 skills
* Measuring skills
* Numeracy skills
* Interpersonal skills
* Mortar handling skills
* Masonry Units Handling skills
* Proper tool and equipment use

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Measurement
* Squaring techniques
* Masonry units and its uses
* Proper use and maintenance of tools and equipment
* Wall construction techniques

**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. Used masonry tools and equipment as per work requirement. 2. Identified building elevations based on type. 3. Interpreted measurements in accordance with international standards. 4. Prepared foundation trenches as per working drawing. 5. Constructed foundation according to working drawings. 6. laidfoundation walling units as per working drawing. 7. Casted concrete slab as per work requirement 8. Casted Concrete elements as per work requirement 9. Laid masonry wall units according to drawings 10. Constructed Bridging of walls as per drawings |
| 1. Resource   Implications | The following resourcesshould be provided:   1. Access to relevant workplace where assessments can take place. 2. Appropriately simulated environment where assessments can take place 3. Resources relevant to the proposed activity or tasks |
| 1. Methods of   Assessment | Competency may be assessed through:   1. Practical 2. Projects 3. Portfolio of evidence 4. Third party report 5. Written tests 6. Oral tests |
| 1. Context of Assessment | Assessment may be done in a workplace or in a simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

**PERFORM MASONRY WORKS FINISHES I**

**UNIT CODE: 0732 251 02A**

**Unit Description**

This unit specifies the competencies required to perform masonry works finishes. It entails applying wall plaster and rendering, laying of floor screed and carrying out keying and pointing. It applies in the construction industry.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **Element**  *These describe the key outcomes which make up*  *workplace function* | **Performance Criteria**  *These are assessable statements, which specify the required level of performance for each of the elements.* ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Carry out wall plastering | * 1. ***Personal protective equipment*** is donned as per work requirement   2. Wall Plumbness is checked as per work requirement.   3. Dot guides are laid following the plumb-ness as per work requirement   4. Plaster is applied as per work requirement   5. Plaster is cured as per work requirement. |
| 1. Lay floor screed | * 1. Personal protective equipment is donned as per work requirement   2. Floor is prepared for screed as per work requirement   3. ***Screed*** is laid as per work requirement   4. Screed is cured as per work requirement |
| 1. Carry out wall Rendering | * 1. Personal protective equipment are donned as per work requirement   2. Wall is prepared as per job specification   3. ***Rendering materials*** are applied as per work requirement   4. Rendering is ***cured*** as per work requirement |
| 1. Carry out keying and pointing. | * 1. Wall surface is prepared based on its condition and job requirements.   2. Mortar mix is prepared as per specification and working drawing.   3. Keying and **pointing** are done as per specification and 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** |
| Personal Protective Equipment may include but not limited to: | * Hard hat / helmet * Dust Mask * Goggles * Ear plugs / ear muffs * Dust coat / coverall * Gloves * Safety shoes / gum boots * Reflector jackets |
| Screed may include but not limited to: | * Bonded Screed * Unbonded Screed * Floating Screed |
| Rendering materials may include but not limited to: | * Cement * Aggregates |
| Curing may include but not limited to: | * Water * Jute Sacks * Blankets * Sand |
| Pointing may include but not limited to: | * Tuck * Flush * Recessed * Weathered |

**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 skills
* Measuring skills
* Numeracy skills
* Interpersonal skills
* Mortar handling skills
* Masonry Units Handling skills
* Proper tool and equipment use

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Measurement
* Squaring techniques
* Type of finishes and application
* Masonry units and its uses
* Proper use and maintenance of tools and equipment
* 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. Used masonry tools and equipment appropriately. 2. Prepared walls for finishing and rendered as per specification. 3. Applied Plaster as per work requirement    1. Laid Screed as per work requirement    2. Applied Rendering materials as per work requirement    3. Keyed and pointed the wall as per the specifications and standard procedure. |
| 1. Resource   Implications | The following resourcesshould be provided:   * 1. Access to relevant workplace where assessments can take place.   2. Appropriately simulated environment where assessments can take place   3. Resources relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Practical   2. Projects   3. Portfolio of evidence   4. Third party report   5. Written tests   6. Oral tests |
| 1. Context of Assessment | Assessment may be done in a workplace or in a simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

**PRODUCE MASONRY PRODUCTS**

**UNIT CODE: 0732 251 03A**

**Unit Description**

This unit specifies the competencies required to produce simple masonry products. It entails interpretation of masonry units drawings, production of masonry clay units, production of concrete masonry products, production of stabilized soil masonry products and performing stone dressing.

**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 masonry units’ drawings | * 1. Dimensions are transferred based on working drawings standards.   2. ***Elevations*** are identified based on type   3. Angles are Measured based on working drawings standards. |
| 1. Produce clay masonry units | * 1. ***Personal protective equipment*** are donned as per work requirement   2. Clay is prepared as per work requirement   3. Clay bricks are prepared as per work procedure.   4. Clay bricks are dried as per work procedure   5. Kilning is performed as per work procedure. |
| 1. Produce concrete masonry   products | * 1. Personal protective equipment are donned as per work requirement   2. Concrete is prepared based on block specification.   3. Concrete blocks are prepared as per work procedure***.***   4. Concrete blocks are cured as per work procedure |
| 1. Produce stabilized soil masonry units | * 1. Personal protective equipment are donned as per work requirement   2. Materials are prepared based on job specification.   3. Soil blocks are prepared as per work procedure   4. Soil blocks are ***cured*** as per work procedure. |
| 1. Perform stone dressing | * 1. Required ***PPEs*** are identified and used based on job requirements and manufacturers’ instructions.   2. Required ***tools and equipment*** for production of hand dressed masonry units are identified based on the working drawings and specifications.   3. Dressed stones are sorted based on size and 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.

|  |  |
| --- | --- |
| **Variables** | **Range** |
| * + - 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 shoes / gum boots   Reflector jackets |
| * + - 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:

* Communication skills
* Measuring skills
* Numeracy skills
* Interpersonal skills
* Mortar handling skills
* Masonry Units Handling skills
* Proper tool and equipment use

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Measurement
* Squaring techniques
* Proper use and maintenance of tools and equipment
* Curing
* Different masonry products

**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 raw materials for production of various masonry products. 2. Measured angles based on working drawings standards. 3. Used and maintained masonry tools and equipment appropriately. 4. Prepared clay masonry units to specifications 5. Prepared concrete masonry products to specifications 6. Prepared stabilized soil masonry units to specifications 7. Dressed stones are based on size and job requirements |
| 1. Resource   Implications | The following resources should be provided:   * 1. Access to relevant workplace where assessments can take place.   2. Appropriately simulated environment where assessments can take place   3. Resources relevant to the proposed activity or tasks. |
| 1. Methods of   Assessment | Competency may be assessed through:   1. Practical 2. Projects 3. Portfolio of evidence 4. Third party report 5. Written tests 6. Oral tests |
| 1. Context of Assessment | Assessment may be done in a workplace or in a simulated workplace. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

**PERFORM BUILDING SITE PRELIMINARY WORKS**

**UNIT CODE : 0732 351 05A**

**UNIT DESCRIPTION**

This unit describes the competence required to perform building site preliminary works.

It involves carrying out site clearance, carrying out site hoarding and building construction site amenities.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENTS**  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 terms are elaborated in the Range)* |
| 1. Carry out site clearance | 1. ***Site clearance PPEs*** are donned as per the work requirement 2. ***Site clearance tools and equipment*** are assembled as per work requirements 3. Site clearance is conducted as per National building code 2015 requirements 4. Methods of site clearance are identified as per the national building code 5. Demolition is conducted as per work specifications 6. **Debris disposal** is done as per the work requirements |
| 1. Carry out site hoarding | * 1. ***Hoarding PPEs*** are donned as per work requirements   2. ***Hoarding tools*** are assembled as per work requirements   3. ***Hoarding materials*** are assembled as per the National building code 2015requirement   4. Hoarding area is demarcated as per work specifications   5. Hoarding is erected as per work requirements   6. Hoards are dismantled as per the National building code 2015 requirement.   7. Hoarding materials are stored as per manufacturers’ specifications. |
| 1. Build construction site amenities | 1. **PPEs** are selected as per the work requirement 2. Tools and equipment are selected as per the work requirement 3. Site amenities materials are assembled as per the work requirement 4. ***Site amenities*** are constructed as per the site plan 5. Site amenities are dismantled as per the National building code 2015 requirement 6. Site amenities materials are stored as per manufacturers’ specifications |

**RANGE**

| **Variable** | **Range** |
| --- | --- |
| 1. Site clearance PPEs may include but is not limited to: | * + Helmet   + Safety boots   + Gloves   + Reflectors   + Safety goggles   + Dust mask   + Overall coat |
| 1. Site clearance tools and equipment may include but is not limited to: | * + Slasher   + Mattock   + Rake   + Sledge hammer   + Fork Jembe   + Machete |
| 1. Hoarding PPEs may include but is not limited to: | * + Helmet   + Safety boots   + Gloves   + Reflectors   + Safety goggles   + Dust mask   + Overall coat |
| 1. Hoarding tools may include but is not limited to: | * + Claw hammer   + Craw bar   + Mason hammer   + Hand saw   + Panga   + Measuring tape   + Spade   + Tamping rod |
| 1. Hoarding materials may include but is not limited to: | * + GI sheets |
| 1. Methods of debris disposal may include but not limited to | * Incineration * Composting * Recycling |
| 1. Siteamenitiesmay include but is not limited to: | * + Site office   + Store   + Toilet   + Security hut   + Changing room |

**REQUIRED KNOWLEDGE and SKILLS**

**Knowledge**

* Measurement
* Local authority by-laws
* Basic arithmetic
* Regulatory requirements.

**Skills**

* Sketching
* Reading measurements
* Communication
* Organisation

**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. Cleared site as per National building code 2015 requirements 2. Disposed debris as per the NEMA regulations 3. Demarcated hoarding area as per work specifications 4. Erected hoarding as per work requirements 5. Constructed site amenities as per the site plan |
| 1. Resource Implications | The following resources **should** be provided:   * 1. Access to relevant workplace where assessments can take place.   2. Appropriately simulated environment where assessments can take place   3. Resources relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   1. Practical 2. Projects 3. Portfolio of evidence 4. Third party report 5. Written tests 6. Oral tests |
| 1. Context of Assessment | Competency may be assessed in actual workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the building sector workplace and job role is recommended. |

**PERFORM BUILDING TEMPORARY WORKS**

**UNIT CODE: 0732 453 06A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to perform building temporary works efficiently and safely. It involves performing timbering works, preparing building formwork, preparing construction scaffolds and preparing building shores.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT** | **PERFORMANCE CRITERIA**  *(Bold and italicized terms are elaborated in the Range)* |
| 1. Perform timbering works | * 1. PPEs are donned as per work requirements   2. Timbering tools and equipment are assembled as per the work requirement   3. Trench timbering materials are prepared as per work requirement   4. Trench timbering is mounted out according to National building code requirement.   5. Timbering is dismantled as per the National building code requirement   6. Timbering materials are stored as per the manufacturer’s instruction |
| 1. Prepare building formwork | 1. PPEs are donned as per work requirements 2. ***Formwork tools and equipment***are assembled as per the work requirement 3. ***Formwork materials*** are prepared as per work requirement 4. Formwork is mounted according to National building code 2015 requirement 5. Formwork is struck off as per the National building code 2015 requirement 6. Formwork materials are stored as per the manufacturer’s requirements |
| 1. Prepare construction scaffolds | * 1. PPEs are donned as per work requirements   2. ***Scaffolding tools and equipment***are assembled as per the work requirement   3. ***Scaffolding materials*** are prepared as per work requirement   4. Scaffold is mounted according to National building code 2015 requirement   5. Scaffold is dismantled as per the National building code 2015 requirement   6. Scaffolding materials are stored as per the manufacturer’s requirements |
| 1. Prepare building shores | 1. PPEsare donned as per the work requirement 2. ***Building shores tools and equipment*** are assembled as per work requirement 3. ***Building shores materials*** are assembled as per work requirement 4. Building shores size is prepared as per work requirement 5. Building shore is fixed as per National building code 2015 requirement 6. Building shore is dismantled as per national building code 2015 requirement 7. Building shores materials are stored as per manufacturers’ specifications |

**RANGE**

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. PPEs may include but is not limited to: | * Helmet * Safety boots * Gloves * Reflectors * Safety goggles * Dust mask * Overall coat * Harness |
| 1. Timbering tools and equipment may include but not limited to: | * Claw hammer * Craw bar * Mason hammer * Hand saw * Panga * Measuring tape |
| 1. Formwork tools and equipment may include but is not limited to: | * Claw hammer * Craw bar * Mason hammer * Hand saw * Panga * Measuring |
| 1. Formwork materials may include but is not limited to: | * Timber * Steel sheet * Marine board |
| 1. Scaffolding tools and equipment may include but is not limited to: | * Claw hammer * Craw bar * Mason hammer * Hand saw * Panga * Measuring |
| 1. Scaffolding materials may include but not limited to: | * Steel sheets * Timber * Steel props |
| 1. Building shores tools and equipment may include but not limited to: | * Saw * Claw Hummer * Crow bar * Spanners * Pliers * Hydraulic shoring jacks |
| 1. Building shores materials may include but not limited to: | * Wire nails * Timber * GI sheets * **S**caffold tubes * Couplers |

**REQUIRED KNOWLEDGe and SKILLS**

**knowledge**

* Basic arithmetic
* Occupational safety and health
* Codes of practice
* Materials science
* Construction machines, tools and equipment
* Demolition techniques

**Skills**

* Basic mathematic
* Reading skills
* Communication
* Organisation
* Problem solving
* Critical thinking
* Interprating of drawings
* Construction tools handling

**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. Mounted trench timbering according to National building code 2015 requirement 2. Mounted formwork according to National building code 2015 requirement 3. Struck off formwork as per the National building code 2015 requirement 4. Mounted scaffold according to National building code 2015 requirement 5. Dismantled scaffold as per the National building code 2015 requirement 6. Fixed building shores as per National building code 2015 requirement 7. Dismantled building shores as per National building code 2015 requirement 8. Conducted housekeeping as per OSHA –CAP 236A |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace where assessments can take place. 2. Appropriately simulated environment where assessments can take place 3. Resources relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   1. Practical 2. Projects 3. Portfolio of evidence 4. Third party report 5. Written tests 6. Oral tests |
| 1. Context of Assessment | Competency may be assessed in actual workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## PERFORM BUILDING SUBSTRUCTURE WORKS

**UNIT CODE:** 0732 451 11A

**UNIT DESCRIPTION**

This unit specifies the competencies required to performing building substructure works. It involves, executing foundation excavation works, laying foundation concrete, carrying out foundation walling and laying out construction oversite concrete.

**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*** |
| Execute foundation excavation works | 1. ***PPEs*** are donned as per job requirements 2. ***Type of foundation*** is identified as per Structural engineer’s specifications. 3. Trench excavation tools and equipment are assembled as per the job requirement 4. Trench timbering materials are prepared as per work requirement 5. Trench excavation is carried out as per Structural engineer’s specifications 6. Trench timbering is mounted out according to National building code 2024 requirement 7. Dewatering is carried out according to National building code 2024 requirement 8. Ant termite treatment of the foundation as per the national building code 2024 requirements |
| Lay foundation concrete | 1. PPEs are donned as per job requirements 2. Concrete works tools and equipment are identified as per job requirement 3. ***Concrete class*** for the work is identified as per structural engineers’ specifications 4. ***Concrete materials*** are batched as per concrete class identified 5. Reinforcement bars are fixed as per structural specifications 6. Batched materials are mixed as per job requirements 7. Fresh concrete is placed as per work requirement 8. Compaction is done as per work requirement 9. Curing is done as per work requirement |
| Carry out foundation walling | 1. PPEsare donned as per work requirements 2. ***Foundation wall construction tools and equipment*** identified as per work requirement 3. ***Foundation wall construction materials*** are prepared as per work requirement 4. Foundation wall dimensions are transferred from the profile board as per working drawings. 5. Foundation wall is erected as per National building code 2024 requirement 6. Curing process is curried out as per the National building code 2024 7. Backfilling is carried out according to National building code 2024 requirement. |
| lay out construction over-site concrete | 1. PPEs are donned as per the job requirement 2. ***Over-site concrete construction tools and equipment*** are assembled as per the work requirement 3. ***Ground construction materials*** are prepared as per work requirement 4. Functional requirements of oversite concrete 5. ***Hard-core filling*** is laid out as per National building code 2024 requirement 6. Formwork is erected as per the national building code 2024 requirement 7. Blinding is laid out according to National building code 2024 requirement. 8. Anti-termite treatment is applied as per the National building code 2024 requirement 9. DPM is laid as per national building code 2024 10. BRC mesh is laid as per structural engineers specification 11. ***Over-site concrete construction materials*** are prepared as per National building code 2024 requirement 12. Concrete slab is cast according to National building code 2024 requirement 13. Curing is carried out as per the National building code 2024 requirement |

**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. PPEs may include but not limited to: | * Helmet * Gloves * Dustcoat overall * Safety shoes boots |
| * + - 1. Type of foundationmay include but not limited to: | * Strip * Raft * Pad * Pile |
| * + - 1. Concrete works tools and equipmentmay include but not limited to: | * Trowel * Spade * Wheelbarrows * Compactors * Mixer |
| * + - 1. Concrete class may include but not limited to: | * Class 15 * Class 20 * Class 25 * Class 30 |
| * + - 1. Concrete materials may include but not limited to: | * Cement * Fine aggregates * Course aggregates * Water |
| * + - 1. Foundation wall construction tools and equipment may include but not limited to: | * Trowel * Spade * Wheelbarrows * Building line * Plumb bob * Spirit level * Mason square |
| * + - 1. Foundation wall construction materials may include but not limited to: | * Cement * Fine aggregates * Masonry units      * Water |
| * + - 1. Over-site concrete construction tools and equipmentmay include but not limited to: | * Trowel * Spade * Wheelbarrows * Compactors * Mixer |
| * + - 1. over-site concrete construction materials may include but not limited to: | * Cement * Fine aggregates * Course aggregates * Water * Hard-core * BRC mesh * DPM |

**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 skills
* Communication skills
* Sketching skills
* Interpretation skills
* Problem-solving skills
* Critical thinking skills
* Organizing skills
* Measuring skills
* Numeracy skills
* Interpersonal Relationship skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Interpretation of symbols
* Conversion of units
* Materials and supplies
* Concreting tools and equipment’s
* Methods of jointing
* Mensuration
* Concreting

**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. Trench excavation is carried out as per structural engineers specification 2. Foundation concrete is laid as per national building code 2024 requirement 3. Foundation wall is erected as per working drawing specifications 4. Over-site concrete is cast as per national building code 2024 requirement. 5. Conducted housekeeping as per OSHA –CAP 236A |
|  | 1. Resource Implications | The following resources should be provided:   * 1. Access to relevant workplace or appropriately simulated environment where assessment can take place   2. Materials relevant to the proposed activity or tasks |
|  | 1. Methods of Assessment | Competency in this unit may be assessed through:   * 1. Practical   2. Projects   3. POE evaluation   4. Third party reports   5. Written tests |
|  | 1. Context of Assessment | The competency may be assessed in a workplace or a simulated workplace |
|  | 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## INSTALL DOORS AND WINDOWS

**UNIT CODE: 0732451/14/A**

**UNIT DESCRIPTION:**

This unit describes the competencies required to install doors and windows. It involves

Installing door and window frames, constructing and fixing door and windows and fixing iron mongeries.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace functions | **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. Install door and window frames | * 1. Door and window schedule is prepared and interpreted as per working drawing   2. Door and Window frames are costed as per job requirement   3. Door and windowframes are fixed in position according to specification |
| 1. Construct and fix door and window shutters | * 1. Door and window ***shutters*** are identified according to the specifications   2. Door and window shutters are constructed according to specification   3. Doors and windows arehangedin position according to specifications |
| 1. Fix iron mongeries | * 1. ***Iron mongeries*** are identified as per specification   2. Iron mongeries are fitted as per specification   3. Iron Mongeries are tested for functional requirements |

**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. 1. ***Shutter*** include but are not limited to: | * Metallic * Plastic * Glass * Wooden |
| 2. Iron Mongeries include but are not limited to: | * Fasteners * Peg Stay * Enclosures * Ball catchers * Locks * Hinges * Handles * Stoppers * Nails and screws |

**REQUIRED KNOWLEDGE AND SKILLS**

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

* Occupational Health and Safety
* Technical Drawing
* Building Drawing
* Mensuration
* Construction plants and equipment
* Construction materials
* General Building Construction
* Physical planning
* Carpentry and Joinery

**Required skills**

The individual needs to demonstrate the following skills:

* Communication skills
* Problem solving skills
* Analytical skills
* Numeracy skills
* Critical thinking
* Construction tools handling skills

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical aspects of competency | Assessment requires evidence that the candidate:   * 1. Installed door and window frames   2. Identified door and window shutters according to the specifications.   3. Constructed door and window shutters are according to specification.   4. Fixed iron mongeries. |
| 1. Resource implications | The following resources should be provided:   * 1. Tools and equipment   2. Construction tools and Equipment   3. Construction plant   4. ICT equipment   5. Drawing Instruments and equipment   6. Material testing laboratories |
| 1. Methods of assessment | Competency in this unit may be assessed through:   * 1. Practical assignment   2. Written   3. Oral interview   4. Demonstrations   5. Observation |
| 1. Context of assessment | 1. Competency may be assessed in workplace or in a simulated workplace setting 2. Assessment shall be observed while tasks are being undertaken whether individually or in-group |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector and workplace job role is recommended. |

## EXECUTE EXTERNAL WORKS

**UNIT CODE: 0732451/16/A**

**UNIT DESCRIPTION:**

This unit describes the competencies required to execute external works. It involves performing landscaping, constructing drainage system, laying external paving, and constructing gates and fences.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace functions | **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. Perform landscaping | * 1. Area for landscaping is determined in accordance with the site layout   2. Landscaping ground is prepared as per design specifications   3. vegetative features are planted as per the landscape design   4. Irrigation method is determined as per landscape design   5. ***Beautification*** is carried out as per design specifications |
| 1. Construct drainage system | * 1. Drainage drawings are interpreted as per the design requirement   2. ***Drainage channels*** are excavated as per the drawing   3. Backfilling, Levelling and compacting is done as specification   4. ***Drainage pipes*** are laid as per civil engineering drawings   5. Drainage channels and collection chambers are constructed according to civil engineering drawings |
| 1. Lay external paving | * 1. Ground is surveyed to determine topography   2. Ground is excavated to the required depth according to engineers’ specification.   3. The base is prepared in accordance with civil engineers’ specifications   4. Levelling dust is spread in accordance with civil engineers’ specifications   5. Kerbs stones and channels are laid as per the specification.   6. ***External paving*** is laid as per civil engineers’ specifications.   7. Marking is done as per directional requirement. |
| 1. Construct gates and fences | * 1. Gate location and orientation is determined according to site layout.   2. Gate measurements are determined according to the specifications   3. ***Gate supporting systems*** are constructed according to codes of practice   4. Gate is procured and installed as per design measurements   5. ***Perimeter fence*** is constructed as per design requirement.   6. Essential services (CCTVS cameras security lighting razor wire, Electric fence) are installed as per design 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.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. 1. *Beautification* include but are not limited to: | * + Ornamental trees   + Grassing   + Flowers   + Shrubs   + Ground cover   + Garden furniture   + Garden lighting |
| 1. Drainage channels include but are not limited to: | * Open channels * Closed channels |
| 1. Drainage pipes include but are not limited to: | * concrete pipes * PVC pipes * GI pipes * PPR pipes |
| 1. External paving include but are not limited to: | * Tarmac * Concrete blocks * Clay * Ceramic * Rubble stones * Paving slabs |
| 1. Perimeter fence include but are not limited to: | * Masonry walls * Live fence * Reinforced concrete walling * Wooden post and chain link/barbed wire * Steel post and chain link * Concrete post and chain link |

**REQUIRED KNOWLEDGE AND SKILLS**

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

* Occupational Health and Safety
* Technical Drawing
* Building Drawing
* Mensuration
* Construction plants and equipment
* Construction materials
* General Building Construction
* Physical planning
* Carpentry and Joinery

**Required skills**

The individual needs to demonstrate the following skills:

* Communication skills
* Problem solving skills
* Analytical skills
* Numeracy skills
* concrete mixer operation
* Critical thinking
* Construction tools handling skills

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1.Critical aspects of competency | Assessment requires evidence that the candidate:   * 1. Performed landscaping.   2. Excavated drainage channels as per the drawing.   3. Laid drainage pipes as per civil engineering drawings.   4. Laid external paving as per civil engineers’ specifications.   5. Constructed gate supporting systems according to codes of practice.   6. Constructed perimeter fence as per design requirement. |
| 1. Resource implications | The following resources should be provided:   * 1. Tools and equipment   2. Construction tools and Equipment   3. Construction plant   4. ICT equipment   5. Drawing Instruments and equipment   6. Material testing laboratories |
| 1. Methods of assessment | Competency in this unit may be assessed through:   * 1. Practical assignment   2. Written   3. Oral interview   4. Demonstrations   5. Observation |
| 4. Context of assessment | 1. Competency may be assessed in workplace or in a simulated workplace setting 2. Assessment shall be observed while tasks are being undertaken whether individually or in-group. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector and workplace job role is recommended. |

## PERFORM BUILDING SUPERSTRUCTURE WORKS

**UNIT CODE:** 0732 451 12A

**UNIT DESCRIPTION**

This unit specifies the competencies required to perform building super structure works. It involves: Erecting structural elements, Laying of superstructure walls, Carrying out upper floor construction and fixing building casements. These entail activities that are carried out above the ground level of a building and also contribute greatly to the functionality and stability of the structure under construction.

**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*** |
| Erect structural elements | 1. ***PPEs***are donned as per the work requirement 2. ***Structural element tools* *and equipment*** are assembled as per the work requirement 3. ***Structural element materials*** are prepared as per work requirement 4. Reinforcement bars are fixed as per structural specifications 5. Formwork is erected as per National building code 2024 requirement. 6. Concrete is placed as per National building code 2024 requirement 7. Formwork is struck off for reuse as per work requirement 8. Curing is carried out as per the National building code 2024 requirement |
| 1. Lay superstructure walls | 1. PPEsare donned as per the job requirement 2. ***Wall construction tools* *and equipment*** are assembled as per work requirement 3. ***Type of wall***to be constructed is identified as per working drawings specification 4. ***Walling materials*** are prepared as per work requirement 5. Screed is laid as per the working drawing specifications 6. Damp proof course is laid out as per National building code 2024 requirement 7. Construction wall is erected as per work procedure 8. Clean-up, waste collection and disposal is carried out as per NEMA regulations. 9. Superstructure wall openings to be carried out as per work requirement 10. Superstructure walls curing is carried out as per the National building code 2024 requirement |
| 1. Carry out upper floor construction. | 1. PPEsare donned as per the work requirement 2. ***Type of upper floor*** is identified as per working drawings requirement 3. ***Upper floor construction tools and equipment*** identified as per work equipment 4. Upper floor construction materials are prepared as per work requirement 5. Formwork is erected according to National building code 2024 6. Upper floor is installed as per National building code 2024 requirement 7. Formwork is struck off according to National building code 2024 8. Upper floor curing is carried out as per the National building code 2024 requirement |
| 1. Fix building casements | 1. PPEsare donned as per the work requirement 2. ***Building Casement*** positions are identified as per the architectural drawings 3. Building Casements are obtained as per the required sizes 4. Building Casements are fixed as per the design 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.

|  |  |
| --- | --- |
| **Variables** | **Range** |
| 1. PPEs may include but not limited to | * Helmet * Gloves * Dustcoat overall * Safety boots |
| 1. Structural element tools and equipment may include but not limited to: | * Trowel * Spade * Wheelbarrows * Compactors * Mixer |
| 1. Structural element materials may include but not limited to | * Cement * Fine aggregate * Course aggregate * Water * Reinforcement |
| 1. Wall construction tools and equipment may include but not limited to | * Measuring tools * Levelling equipment * Mason trowels * Mason square * Spirit level * Masonry chisel * Plumb bob |
| 1. Type of wallmay include but not limited to | * External * Partitioning * Cavity |
| 1. Walling materials may include but not limited to | * Cement * Fine aggregate * Walling units * Hoop iron * Water |
| 1. Type of upper floormay include but not limited to | * Ribbed * Hollow pots * Flat slab |
| 1. Upper floor construction tools and equipmentmay include but not limited to | * Trowel * Spade * Wheelbarrows * Compactors * Mixer |
| 1. Building Casement may include but not limited to | * Door * Windows * Grills |

**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 skills
* Communication skills
* Sketching skills
* Interpretation skills
* Problem-solving skills
* Critical thinking skills
* Organizing skills
* Measuring skills
* Numeracy skills
* Cutting skills
* Interpersonal Relationship skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Interpretation of symbols
* Conversion of units
* Levelling
* Types of bonds
* Concreting knowledge
* Drainage materials and supplies
* Drainage tools and equipment
* Materials and supplies
* jointing
* Mensuration

**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. Erected structural elements as per working drawings specifications 2. Erected super structural walls as per working drawings specifications 3. Constructed upper floor as per national building code 2024 requirement 4. Fixed building casements as per working drawings specifications 5. Conducted housekeeping as per OSHA –CAP 236A |
|  | 1. Resource Implications | The following resources should be provided:   * 1. Access to relevant workplace or appropriately simulated environment where assessment can take place   2. Materials relevant to the proposed activity or tasks |
|  | 1. Methods of Assessment | Competency in this unit may be assessed through:   * 1. Practical   2. Projects   3. POE evaluation   4. Third party reports   5. Written tests |
|  | 1. Context of Assessment | The competency may be assessed in a workplace or a simulated workplace |
|  | 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## PERFORM MASONRY WORKS FINISHES II

**UNIT CODE:** 0732 451 13A

**UNIT DESCRIPTION**

This unit specifies the competencies required to perform building finishes. It involves plastering various surfaces, keying external walls surfaces, pointing of external wall surfaces, laying tiles and laying terrazzo. These are tasks and activities carried out at almost the tail end of construction.

**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. Lay tiles on surfaces. | * 1. PPEsare donned as per the work requirement   2. ***Tiling tools* *and equipment*** are assembled as per the work requirement   3. Tiling Surface is screed as per National building code 2024 requirement.   4. ***Tiling materials*** are assembled based on work required.   5. Tile setting is carried out as per working drawing specifications   6. Tile is cut as per design specifications.   7. Tiles are fixed as per work specification.   8. Tile joint is grouted as per National building code 2024 requirement   9. Tiled surface is cleaned as per work requirement |
| 1. Lay terrazzo on surfaces | * 1. PPEs are donned as per the work requirement   2. ***Terrazzo tools and equipment*** are assembled as per the work requirement   3. Terrazzo Surface is screed as per National building code 2024 requirement.   4. ***Terrazzo materials*** are assembled based on work required.   5. Terrazzo dividing strips are laid as per design requirement   6. Terrazzo chips are mixed as per the design requirement.   7. Green terrazzo mixture is placed as per design requirement.   8. Green terrazzo mixture is compacted as per National building code 2024 requirement   9. Laid terrazzo is cured as per National building code 2024 requirement   10. Terrazzo surface is ground as per work requirement.   11. Terrazzo surface is polished as per National building code 2024 requirement. |
| 1. Apply Paint | * 1. PPEs are donned as per the work requirement   2. Work area is cordoned off as per National building code 2024 requirement.   3. Surface is prepared as per work requirement   4. Painting area is set out as per design requirement   5. Paint is mixed as per the design requirement   6. Paint is applied on the surface as per the design   7. Painting equipment is maintained as per SOPs |

**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. PPEs may include but not limited to | * Helmet * Gloves * Dustcoat overall * Safety boots |
| 1. Tiling tools and equipmentmay include but not limited to | * Trowel * Mullet * Spade * Steel float * Tile cutting machine * Mason square * Spirit level |
| 1. Tiling materials may include but not limited to | * Door * Windows * Grills |
| 1. Terrazzo tools and equipmentmay include but not limited to | * Trowel * Mullet * Spade * Steel float * Compactor * Mason square * Spirit level * Grinder |
| 1. Terrazzo materials   may include but not limited to | * Terrazzo strips * Terrazzo chips * Binder * Diamond stone * Terrazzo polish |

**Required Skills**

The individual needs to demonstrate the following skills:

* Analytical skills
* Drawing skills
* Problem-solving skills
* Critical thinking skills
* Organizing skills
* Measuring skills
* Numeracy skills
* Tile Cutting skills
* Assembling skills
* Mixing skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Types of fittings and appliances
* Properties of materials
* Measurements
* Drawing interpretation
* Entrepreneurial

**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. Laid tile as per work specifications 2. Laid terrazzo as per working drawing specifications 3. Conducted housekeeping as per OSHA –CAP 236A 4. Prepared surface as per work requirement 5. Mixed Paint as per the design requirement 6. Applied Paint on the surface as per the design |
|  | 1. Resource Implications | The following resources should be provided:   * 1. Access to relevant workplace or appropriately simulated environment where assessment can take place   2. Materials relevant to the proposed activity or tasks |
|  | 1. Methods of Assessment | Competency in this unit may be assessed through:   * 1. Practical   2. Projects   3. Poe evaluation   4. Third party reports   5. Written tests |
|  | 1. Context of Assessment | The competency may be assessed in a workplace or a simulated workplace |
|  | 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |