REPUBLIC OF KENYA

OCCUPATIONAL STANDARDS

FOR

BUILDING TECHNICIAN

LEVEL 5

TVET CDACC
P.O. BOX 15745-00100
NAIROBI

First published 2023

Council Secretary/CEO
TVET Curriculum Development, Assessment and Certification Council
P.O. Box 15745–00100
Nairobi, Kenya
Email: info@tvetcdacc.go.ke

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 of Kenya's development blueprint 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. A key feature of this policy is the radical change in the design and delivery of the TVET training. These reforms require that training in TVET be competency based, curriculum development be industry led, certification be based on demonstration of competence and mode of delivery allows for multiple entry and exit in TVET programmes.

These reforms also demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that these Occupational Standard was adopted and adapted from the Nyeri National Polytechnic.

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

PRINCIPAL SECRETARY, VOCATIONAL AND TECHNICAL TRAINING
MINISTRY OF EDUCATION

PREFACE

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

The Technical and Vocational Education and Training Act No. 29 of 2013 and Sessional Paper No. 1 of 2019 on Reforming Education and Training in Kenya, emphasized the need to reform 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 labor force.

The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC), adopted and adapted these Occupational Standards from the Nyeri National Polytechnic.

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

I am grateful to the Nyeri National Polytechnic for developing the original Occupational standards from which these occupational standards were adapted.

CHAIRMAN, TVET CDACC

ACKNOWLEDGEMENTS

These Occupational Standards were adopted and adapted from the Nyeri National Polytechnic. I am thankful to the Council and management of the Nyeri National Polytechnic for developing the original Occupational Standards.

My gratitude and appreciation goes to all the individuals and organizations who participated in adding value to this occupational standard.

COUNCIL SECRETARY/CEO

TVET CDACC

ABBREVIATIONS AND ACRONYMS

CAD	Computer Aided Design
CCTV	Closed-Circuit Television (surveillance)
CDACC	Curriculum Development, Assessment and Certification Council
EMS	Environmental Management System
ICT	Information Computer Technology
KCSE	Kenya Certificate of Secondary Education
KEBS	Kenya Bureau of Standards
KNQA	Kenya National Qualification Authority
NCA	National Construction Authority
NEMA	National Environment Management Authority
NOS	National Occupational Standards
PPE	Personal Protective Equipment
QA	Quality Assurance
QC	Quality Control
TES	Teach Elite's Shop
TVET	Technical and vocational education and training
TVETA	Technical and Vocational Education and Training Authority
BRC	British reinforcement concrete
ASTM	American society for testing and materials
PPR	Polypropylene pipes
DPM	Damp proof membrane
DPC	Damp proof course
IEE	Institute of electrical engineers
ISCED	International Standard Classification of Education

KEY TO UNIT CODE

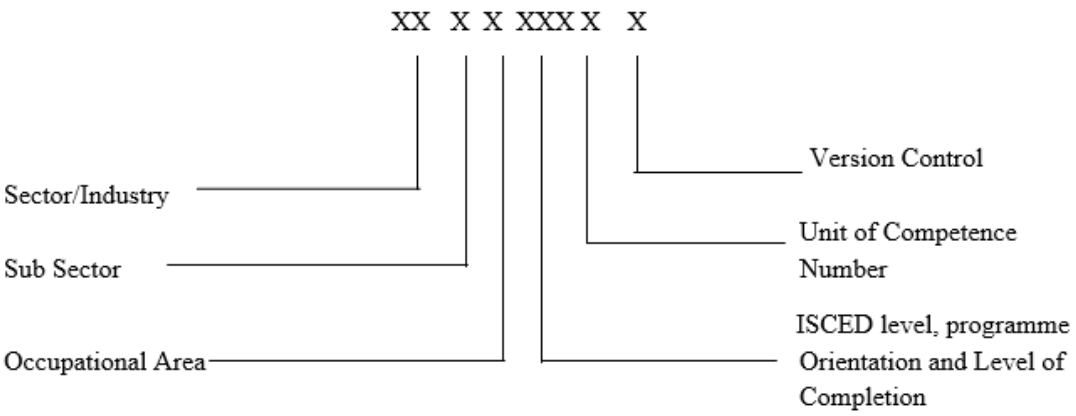

TABLE OF CONTENTS

OVERVIEW

Building Technology Level 5 qualification constis of competencies that a person must acquire to enable him/her to be certified as a Building Technology Craftsperson. The competencies include performing construction site preliminary works, executing building substructure, superstructure and external works, constructing roof structure, installing doors and windows and perform building finishes.

Units of competency comprising Building Technology level 5 qualification include the following basic, common and core competencies:

BASIC UNITS OF COMPETENCY	
Unit Code	**Unit Title**
CON/OS/BUT/BC/01/5/A	Apply Communication Skills
CON/OS/BUT/BC/02/5/A	Apply Digital Literacy
CON/OS/BUT/BC/03/5/A	Apply Entrepreneurial Skills
CON/OS/BUT/BC/04/5/A	Apply Employability Skills
CON/OS/BUT/BC/05/5/A	Apply Environmental Literacy
CON/OS/BUT/BC/06/5/A	Apply Occupational Safety And Health Practices
COMMON UNITS OF COMPETENCY	
CON/OS/BUT/CU/01/5/A	Apply Basic Mathematics
CON/OS/BUT/CU/02/5/A	Apply Technical Drawing
CON/OS/BUT/CU/03/5/A	Apply Scientific principles
CORE UNITS OF COMPETENCY	
CON/OS/BUT /CR/01/5/A	Perform Construction Site Preliminary Works
CON/OS/BUT /CR/02/5/A	Execute Building Substructure Works
CON/OS/BUT /CR/03/5/A	Execute Building Superstructure Works
CON/OS/BUT /CR/04/5/A	Construction Roof Structure
CON/OS/BUT /CR/05/5/A	Install Doors And Windows
CON/OS/BUT /CR/06/5/A	Perform Building Finishes
CON/OS/BUT /CR/07/5/A	Execute External Works
CON/OS/BUT /CR/08/5/A	Industrial Attachment

BASIC UNITS OF COMPETENCY

APPLY COMMUNICATION SKILLS

UNIT CODE: CON/OS/BUT/BC/01/5/A

UNIT DESCRIPTION

This unit describes knowledge, skills and attitudes required to apply general aspects of communication, communicate through verbal, written and non-verbal media and apply technology in communication.

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. Apply general aspects of communication	1.1 Messages are developed and transmitted as per organization's policy 1.2 Appropriate communication pathways are established as per organization's policy 1.3 Etiquette in communication is demonstrated
2. Communicate through verbal medium	2.1 ***Official meetings*** are conducted as per organization's policy 2.2 Speeches are presented as per organization's guidelines 2.3 Briefings are conducted as per organization's policy 2.4 Interviews are conducted as per organization's policy 2.5 Discussions are conducted as per organization's guidelines 2.6 Conversations are conducted as per the organization's guidelines
3. Communicate through written medium	3.1 ***Business letters*** are prepared 3.2 Minutes are prepared as per organization's guidelines 3.3 Written medium of communication is prepared as per organization policy 3.4 Client contracts are drafted as per organization's policy 3.5 Resource requisitions and checklist forms are prepared as per as per organization's policy.
4. Communicate through non-verbal medium	4.1 ***Body language*** is applied as per context 4.2 Dressing code is maintained as per organization's policy 4.3 Signals are applied as per communication regulations policy
5. Communicate through visual and audio-visual media	5.1 Pictures and posters are prepared and displayed as per organization's guidelines 5.2 Demonstrations are conducted as per organization's policy 5.3 Graphical presentations are prepared

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. ***Official meetings*** may include but are not limited to:	• Departmental • Staff • Committee • Annual General Meeting (AGM) • Statutory • Board meetings • Informal meetings • Formal meetings
2. ***Business letters*** may include but are not limited to:	• Cover letters • Letters of recommendation • Interview follow-up letters • Offer letters • Sales letters • Letters of commendation • Letters of resignation Thank you letters
3. ***Body language*** may include but are not limited to:	• Gestures • Facial expressions • Postures
4. ***Online meetings*** may include but are not limited to:	• Webinars • Video conferencing

REQUIRED KNOWLEDGE AND SKILLS

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

Required knowledge

The individual needs to demonstrate knowledge of:

- Communication process
- Presentations
- Online meetings
- Social media platforms
- Forms of written communication
- Conversation techniques
- Non-verbal communication
- Digital literacy

Required skills

The individual needs to demonstrate the following skills:

- Active listening
- Reflecting

- Paraphrasing
- Clarifying
- Questioning
- Focusing
- Building rapport
- Summarizing
- Immediacy
- Concreteness
- Silence
- Presentation
- Organizational
- Interpretation
- Negotiation
- Confrontation
- Basic ICT
- Critical thinking
- Writing
- Problem solving
- Analytical

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: 1.1 Developed and transmitted messages 1.2 Established appropriate communication pathways 1.3 Conducted official meetings 1.4 Conducted conversations as per the organization's guidelines 1.5 Prepared forms of written communication 1.6 Applied body language as per context
2. Resource implications	The following resources should be provided: 2.1 Appropriately simulated environment where assessment can take place 2.2 Access to relevant work environment 2.3 Resources relevant to the proposed activities or tasks

3. Methods of assessment	Competency in this unit may be assessed through: 4.1 Observation 4.2 Oral questioning 4.3 Portfolio of evidence 4.4 Interviews 4.5 Third party report 4.6 Written tests
6. Context of assessment	Competency may be assessed in workplace or in a simulated workplace setting
7. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace job role is recommended.

APPLY DIGITAL LITERACY

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

UNIT DESCRIPTION

This unit covers the competencies required to effectively use digital devices such as smartphones, tablets, laptops, and desktop PCs. It entails identifying and using digital devices such as smartphones, tablets, computers, and peripheral devices for purposes of communication, work performance and management at the workplace.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function	**PERFORMANCE CRITERIA** These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range***
1. Identify computer software and hardware	1.1 Computers are identified according to the user's needs 1.2 ***Computer software*** is identified according to manufacturer's specification 1.3 ***Computer hardware*** is identified according to manufacturer's specification 1.4 ***Computer peripherals*** are identified and operated according to manufacturer's specification 1.5 Operating system functions and commands are identified and applied according to user needs
2. Apply basic data security measures	2.1 ***Data security and privacy measures*** are applied in accordance with Information Security Standard 2.2 ***Security threats*** are identified according to ***ISMS Standards*** 2.3 ***Security control measures*** are applied according to ISMS Standards 2.4 Computer threats and crimes are identified as per the ISO/IEC 27032 cyber security standard. 2.5 Protection against ***computer crimes*** is carried out as per the ISO/IEC 27032 cyber security standard
3. Perform word-processing operations	3.1 Word-processing application interface commands are identified and correctly applied according to workplace procedures 3.2 Word documents are created according to workplace procedures 3.3 Document formatting is performed according to workplace procedures 3.4 Word processing objects are inserted according to workplace procedures

	3.5 Mail merge is performed according to workplace procedures 3.6 Applicable document output is prepared according to workplace procedures
4. Perform spreadsheet operations	4.1 Spreadsheet application interface commands are identified and correctly applied according to workplace procedures 4.2 Cells are correctly referenced and manipulated according to workplace procedures 4.3 Worksheets are managed according to workplace procedures 4.4 Appropriate formulae and functions are identified and applied according to workplace procedures 4.5 Appropriate worksheet formatting is performed according to workplace procedures 4.6 Appropriate charts are prepared according to workplace procedures 4.7 Applicable worksheet output is prepared according to workplace procedures
5. Perform database operations	5.1 Database application interface commands are identified and correctly applied according to workplace procedures 5.2 Appropriate database tables are created according to workplace procedures 5.3 Information is retrieved from the database according to user needs 5.4 Appropriate forms for data entry and viewing records are created according to workplace procedures 5.5 Appropriate database output is prepared according to workplace procedures
6. Apply internet and email in communication	6.1 Internet connection requirements are identified and applied according to workplace procedures 6.2 Web browsing software are identified and applied according to workplace procedures 6.3 Appropriate Information from the web is obtained according to user needs 6.4 Internet communication concepts are applied according to workplace procedures 6.5 Electronic mail communication is performed according to workplace procedures 6.6 Emerging issues in Internet and email communication are identified and applied according to workplace procedures
7. Perform desktop publishing	7.1 Appropriate desktop publishing application is identified according to workplace procedures 7.2 Desktop publishing application interface is properly utilized according to workplace procedures 7.3 Appropriate desktop publication design is performed according to user needs

	7.4 Desktop publication design is implemented according to user needs 7.5 Desktop publication output is generated according to user needs
8. Identify computer software and hardware	8.1 Computers are identified according to the user's needs 8.2 ***Computer software*** is identified according to manufacturer's specification 8.3 ***Computer hardware*** is identified according to manufacturer's specification 8.4 ***Computer peripherals*** are identified and operated according to manufacturer's specification 8.5 Operating system functions and commands are identified and applied according to user needs
9. Apply basic data security measures	9.1 ***Data security and privacy measures*** are applied in accordance with Information Security Standard 9.2 ***Security threats*** are identified according to ***ISMS Standards*** 9.3 ***Security control measures*** are applied according to ISMS Standards 9.4 Computer threats and crimes are identified as per the ISO/IEC 27032 cyber security standard. 9.5 Protection against ***computer crimes*** is carried out as per the ISO/IEC 27032 cyber security standard

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. ***ISMS Standards***	ISO 27001:2013 Annex A
2. Computer crimes	• Computer fraud • Cyber bulling • Hacking • Piracy • Phishing
3. ***Computer software*** may include but not limited to:	A collection of instructions or computer tools that enable the user to interact with a *computer*, its hardware, or perform tasks. • Applications • Operating systems • Device drivers • Browsers • Utility programs
4. ***Computer hardware*** may include but not limited to:	Collection of physical parts of a computer system such as; • Computer case, monitor, keyboard, and mouse

	• All the parts inside the computer case, such as the hard disk drive, motherboard and video card
5. Computer peripherals	Printers, projectors, scanners, camera, smart boards, speakers
6. ***Data security and privacy*** may include but not limited to:	• Confidentiality of data • Cloud computing • Integrity -but-curious data surfing
7. ***Security and control measures*** may include but not limited to:	• Counter measures against cyber terrorism • Risk reduction • Cyber threat issues • Risk management • Pass wording
8. ***Security threats*** may include but not limited to:	• Cyber terrorism • Hacking
9. ***Word processing concepts*** may include but not limited to:	Using a special program to create, edit and print documents
10. ***Network configuration*** may include but not limited to:	Organizing and maintaining information on the components of a computer network
11. Online collaboration tools	Online Calendars Online Meetings Online storage and productivity applications Social Media Online learning environments

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

- Analytical skills
- Interpretation
- Typing
- Communication
- Computing (applying fundamental operations such as addition, subtraction, division and multiplication)
- Using calculator
- Basic ICT skills

Required Knowledge

The individual needs to demonstrate knowledge of:

- Software concept
- Functions of computer software and hardware

- Data security and privacy
- Computer security threats and control measures
- Technology underlying cyber-attacks and networks
- Cyber terrorism
- Computer crimes
- Detection and protection of computer crimes
- Laws governing protection of ICT
- Word processing;
    - ✓ Functions and concepts of word processing.
    - ✓ Documents and tables creation and manipulations
    - ✓ Mail merging
    - ✓ Word processing utilities
- Spread sheets;
    - ✓ Meaning, formulae, function and charts, uses and layout
    - ✓ Data formulation, manipulation and application to cells
    - ✓
- Database;
    - Database design, data manipulation, sorting, indexing, storage retrieval and security
- Desktop publishing;
    - Designing and developing desktop publishing tools
    - Manipulation of desktop publishing tools
    - Enhancement of typeset work and printing documents
- Presentation Packages;
    - ✓ Types of presentation Packages
    - ✓ Creating, formulating, running, editing, printing and presenting slides and handouts
- Networking and Internet;
    - ✓ Computer networking and internet.
    - ✓ Electronic mail and world wide web
- Emerging trends and issues in ICT;
    - ✓ Identify and integrate emerging trends and issues in ICT
    - ✓ Challenges posed by emerging trends and issues

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Identified appropriate computer software and hardware 1.2 Applied basic data security measures 1.3 Performed word-processing operations 1.4 Performed spread sheet operations 1.5 Performed database operations 1.6 Applied internet and email in communication 1.7 Performed desktop publishing

	1.8 Prepared PowerPoint presentation 1.9 Performed Online Collaboration
2. Resource Implications	2.1 Tablets 2.2 Laptops 2.3 Desktop computers 2.4 Calculators 2.5 Internet 2.6 Smart phones 2.7 Operation Manuals
3. Methods of Assessment	mpetency may be assessed through: 3.1 Written Test 3.2 Demonstration 3.3 Practical assignment 3.4 Interview/Oral Questioning 3.5 Demonstration
4. Context of Assessment	Competency may be assessed in workplace or in a simulated workplace setting
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

APPLY ENTREPRENEURIAL SKILLS

UNIT CODE : CON/OS/BUT/BC/03/5/A

UNIT DESCRIPTION

This unit covers the competencies required to apply entrepreneurial skills. It involves demonstrating understanding of an entrepreneur, entrepreneurship and self-employment. It also involves identifying entrepreneurship opportunities, creating entrepreneurial awareness, applying entrepreneurial motivation and developing business innovative strategies.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
1. Express knowledge of an Entrepreneur	1.1 Entrepreneurs and Business persons are classified. 1.2 ***Types of entrepreneurs*** are identified. 1.3 Ways of becoming an Entrepreneur are identified. 1.4 ***Characteristics of Entrepreneurs*** are identified. 1.5 Factors affecting Entrepreneurship development are explored. Causes of business failure are identified
2. Express creativity and innovation	2.1 Creativity and innovation opportunities are identified as per principles of entrepreneurship 2.2 ***Types of innovations*** are identified according to business procedures and strategies 2.3 Market opportunity matrix is prepared as per business procedures and strategies. 2.4 Idea banks are analyzed as per business procedures and strategies. 2.5 Innovations are evaluated according to business procedures and strategies 2.6 Resource mobilization strategies are created as per business procedures and strategies 2.7 ***Funding networks and partnerships*** are forged as per business procedures and strategies Patenting is undertaken as per legal procedures and strategies.
3. Identify Entrepreneurship opportunities	1.6 Sources of business ideas are identified 1.7 ***Business ideas*** and opportunities are generated 1.8 Business life cycle is analysed

	1.9 Legal aspects of business are identified. 1.10 Types of ***business environment*** are identified and evaluated Viable business opportunities are identified
4. Develop entrepreneurial awareness	4.1 ***Forms of businesses*** are explored 4.2 Sources of business finance are identified 4.3 Factors in selecting source of business finance are identified 4.4 ***Governing policies*** on Small Scale Enterprises (SSEs) are determined Problems of starting and operating SSEs are explored
5. Apply entrepreneurial motivation	5.1 ***Internal and external motivation*** factors are determined in accordance with ***motivational theories*** 5.2 Self-assessment is carried out as per ***entrepreneurial orientation*** Entrepreneurial motivation is applied as per motivational theories
6. Develop innovative and creative strategies	6.1 Business innovation strategies are determined 6.2 Creativity in business development is demonstrated in accordance with business strategies 6.3 ***Innovative business strategies*** are developed as per business principles 6.4 Types of business networks are identified 6.5 Networks with other entrepreneurs are created 6.6 ICT is incorporated in business growth and development
7. Develop Business Plan	7.1 Components of a business plan are identified 7.2 Marketing plan is developed as per business plan format 7.3 Organizational/Management plan is prepared in accordance with business plan format 7.4 Production/operation plan in accordance with business plan format

	7.5 Financial plan is prepared in accordance with the business plan format 7.6 Executive summary is prepared in accordance with business plan format

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. Types of entrepreneurs may include but not limited to:	• Innovators • Imitators • Craft • Opportunistic • Speculators
2. Characteristics of Entrepreneurs may include but not limited to:	• Creative • Innovative • Planner • Risk taker • Networker • Confident • Flexible • Persistent • Patient • Independent • Future oriented • Goal oriented
3. Requirements for entry into self-employment may include but not limited to	• Technical skills • Management skills • Entrepreneurial skills • Resources • Infrastructure
4. Internal and external motivation may include but not limited to:	• Interest • Passion • Freedom • Prestige • Rewards • Punishment • Enabling environment

	• Government policies
5. Business environment may include but not limited to:	• External • Internal • Intermediate
6. Forms of businesses may include but not limited to:	• Sole proprietorship • Partnership • Limited companies • Cooperatives
7. Governing policies may include but not limited to:	• Increasing scope for finance • Promoting cooperation between entrepreneurs and private sector • Reducing regulatory burden on entrepreneurs • Developing IT tools for entrepreneurs
8. Innovative business strategies may include but not limited to:	• New products • New methods of production • New markets • New sources of supplies • Change in industrialization

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

- Analytical
- Management
- Problem-solving
- Root-cause analysis
- Communication

Required Knowledge

The individual needs to demonstrate knowledge of:

- Decision making
- Business communication
- Change management
- Competition
- Risk

- Net working
- Time management
- Leadership
- Factors affecting entrepreneurship development
- Principles of Entrepreneurship
- Features and benefits of common operational practices, e. g., continuous improvement (kaizen), waste elimination,
- Conflict resolution
- Health, safety and environment (HSE) principles and requirements
- Customer care strategies
- Basic financial management
- Business strategic planning
- Impact of change on individuals, groups and industries
- Government and regulatory processes
- Local and international market trends
- Product promotion strategies
- Market and feasibility studies
- Government and regulatory processes
- Local and international business environment
- Relevant developments in other industries
- Regional/ County business expansion strategies

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Distinguished entrepreneurs and business persons correctly 1.2 Identified sources of business ideas correctly 1.3 Generated Business ideas and opportunities correctly 1.4 Assessed product demand accurately 1.5 Identified sources of business finance correctly 1.6 Prepared Market opportunity matrix 1.7 Undertook Product Patenting 1.8 Developed Marketing, Organizational/Management, Production/Operation and Financial plans correctly 1.9Presented business plan effectively
2. Resource Implications	The following resources should be provided: 2.1 Check list 2.2 Research tools (Questionnaire, interview guide, observation schedule) 2.3 Materials, tools, equipment and machines relevant

3. Methods of Assessment	3.1 Written tests 3.2 Observation 3.3 Oral questions 3.4 Third party report 3.5 Interviews 3.6 Case problems 3.7 Portfolio
4. Context of Assessment	Competency may be assessed in workplace or in a simulated workplace setting
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

APPLY EMPLOYABILITY SKILLS

UNIT CODE: CON/OS/BUT/BC/03/5/A

UNIT DESCRIPTION

This unit covers competencies required to apply employability skills. It involves competencies for developing self-awareness and dealing with everyday life challenges; applying critical safe work habits and applying leadership skills in a workplace team; planning and organizing workplace activities; applying learning, creativity and innovativeness in workplace functions; maintaining professional growth and managing time effectively in the workplace.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function.	**PERFORMANCE CRITERIA** These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range***
1. Develop self-awareness in workplace.	1.1 Personal vision, mission and goals are formulated based on potential and in relation to organization objectives. 1.2 Emotions are managed as per workplace requirements. 1.3 Thoughts, feelings and beliefs are expressed in direct, honest and appropriate ways. 1.4 Individual performance is evaluated and monitored according to the agreed targets. 1.5 Assertiveness is developed and maintained based on the requirements of the job. 1.6 Own ideas and visions that generates excitement, enthusiasm and commitment are articulated. 1.7 Accountability and responsibility for own actions are applied. 1.8 Self-esteem and a positive self-image is developed and maintained.
2. Apply critical safe work habits for employees in the workplace.	2.1 Stress management techniques are applied at the workplace 2.2 Punctuality is applied in line with workplace policy. 2.3 Personal objectives are integrated with organizational goals

	2.4 Work priorities are set and met in according to workplace procedures.
3. Apply leadership skills in workplace	3.1 ***Team*** parameters and ***relationships*** are identified and applied according to set rules and regulations. 3.2 Individual responsibilities are identified and applied in accordance with work procedures. 3.3 Effective and appropriate ***forms of communication*** in a team are applied according to work place procedures. 3.4 ***Team*** building activities are planned for and carried out in line with organization policy. 3.5 Conflicts are resolved between ***team*** members in line with organization rules and regulations.
4. Plan and organize workplace activities.	4.1 Work schedules are developed for accomplishing given tasks within the set time lines and based on workplace policy. 4.2 Clear project goals are established according to company set policies and regulations. 4.3 Resources are mobilized, allocated and utilized to meet project goals 4.4 Work activities are monitored and evaluated in line with organization procedures.
5. Maintain professional growth and development in the workplace.	5.1 Personal training needs are identified and done in line with the requirements of the job. 5.2 ***Training and career opportunities*** are identified and applied based on job requirements. 5.3 Resources for training are mobilized and allocated based organizations skills needs. 5.4 Licensees and certifications relevant to job and career are obtained and renewed.

	5.5 ***Personal growth*** is pursued towards improving the qualifications set for the profession. 5.6 Work priorities and commitments are managed based on requirement of the job and workplace policy. 5.7 Recognitions are sought as proof of career advancement in line with professional requirements.
6. Apply learning, creativity and innovativeness in the workplace	6.1 Time and effort is invested in learning new skills-based job requirements. 6.2 Willingness to learn in different context is applied based on available learning opportunities arising in the workplace. 6.3 Learning opportunities are sought and taken based on job requirement and in line with organization policy. 6.4 Learning is applied in both technical and non-technical aspects based on requirements of the job. 6.5 Range of basic IT skills is applied based on requirements of the job. 6.6 Awareness of Occupational Health and Safety procedures are applied in use of technology in the workplace. 6.7 Initiative is taken to create more effective and efficient processes and procedures in line with workplace 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.

Range	**Variable**
1. Feedback may include but not limited to:	• Verbal • Written • Informal • Formal

2. Relationships may include but not limited to:	• Man/Woman • Trainer/trainee • Employee/employer • Client/service provider • Husband/wife • Boy/girl • Parent/child • Sibling relationships
3. Forms of communication may include but not limited to:	• Written • Visual • Verbal • Non verbal • Formal and informal
4. Team may include but not limited to:	• Small work group • Staff in a section/department • Inter-agency group
5. 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
6. Personal objectives may include but not limited to:	• Long term • Short term • Broad • Specific
7. Trainings and career opportunities may include but not limited to	• Participation in training programs • Technical • Supervisory • Managerial • Continuing Education • Serving as Resource Persons in conferences and workshops
8. Resource may include but not limited to:	• Human • Financial • Hardware • Software
9. Innovation may include but not limited to:	• New ideas • Original ideas • Different ideas • Methods/procedures

	• Processes • New tools
10. Emerging issues may include but not limited to:	• Terrorism • Social media • National cohesion • Open offices
11. Range of media for learning may include but not limited to:	• Mentoring • peer support and networking • IT and courses

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
- Critical thinking
- Observation
- Organizing
- Negotiation
- Monitoring
- Evaluation
- Record keeping
- Problem solving
- Decision Making
- Resource utilization
- Resource mobilization

Required Knowledge

The individual needs to demonstrate knowledge of:

- Work values and ethics
- Company policies
- Company operations, procedures and standards
- Occupational Health and safety procedures
- Fundamental rights at work
- Personal hygiene practices
- Workplace communication
- Concept of time
- Time management

- Decision making
- Types of resources
- Work planning
- Resources and allocating resources
- Organizing work
- Monitoring and evaluation
- Record keeping
- Leadership
- Safe work habits
- Professional growth and development
- Technology in the workplace
- Emerging issues
- Social media
- Terrorism
- National cohesion

EVIDENCE GUIDE

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

1. Critical aspects of Competency	Assessment requires evidence that the learner: 1.1 Evaluated and monitored Individual performance according to the agreed targets. 1.2 Managed stress at the workplace in accordance with workplace procedures. 1.3 Applied punctuality and time consciousness in line with workplace policy. 1.4 Applied values required in problem solving process at the work place 1.5 Pursued personal growth towards improving the qualifications set for the profession. 1.6 Applied learning in both technical and non-technical aspects based on requirements of the job.
2. Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place 2.2 Appropriately simulated environment where assessment can take place
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Oral questioning 3.2 Portfolio of evidence 3.3 Third Party Reports 3.4 Written tests

4. Context of Assessment	Competency may be assessed in workplace or in a simulated workplace setting
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

APPLY ENVIRONMENTAL LITERACY

UNIT CODE: CON/OS/BUT/BC/04/5/A

UNIT DESCRIPTION

This unit specifies the competencies required to follow procedures for environmental hazard control, follow procedures for environmental pollution control, comply with workplace sustainable resource use, evaluate current practices in relation to resource usage, develop and adhere to environmental protection principles/strategies/guidelines, analyze resource use, develop resource conservation plans and implement selected plans.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function.	**PERFORMANCE CRITERIA** These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range***
1. Control environmental hazard	1.1 Storage methods for environmentally ***hazardous*** materials are strictly followed according to environmental regulations and OSHS. 1.2 ***Disposal methods*** of hazardous wastes are followed always according to environmental regulations and OSHS. 1.3 ***PPE*** is used according to OSHS.
2. Control environmental Pollution	2.1 Environmental pollution ***control measures*** are compiled following standard protocol. 2.2 Procedures for solid waste management are applied according to Environmental Management and Coordination Act 1999 2.3 Methods for minimizing ***noise pollution*** are compiled following environmental regulations.
3. Demonstrate sustainable resource use	3.1 Methods for minimizing wastage are complied with. 3.2 Waste management procedures are performed following principles of 3Rs (Reduce, Reuse, Recycle) 3.3 Methods for economizing or reducing resource consumption are practiced.
4. Evaluate current practices in relation to resource usage	4.1 Information on resource efficiency **systems and procedures** are collected and provided to the work group where appropriate. 4.2 Current resource usage is measured and recorded by members of the work group.

	4.3 Current purchasing strategies are analyzed and recorded according to industry procedures. 4.4 Current work processes to access information and data is analyzed following enterprise protocol.
5. Apply Environmental legislations/conventions for environmental concerns	5.1 Environmental ***legislations/conventions*** and local ordinances are applied according to the different ***environmental aspects/impact*** 5.2 ***Industrial standard/environmental practices*** are applied according to the different environmental concerns
6. Implement specific environmental programs	6.1 Environmental Programs/Activities are implemented according to organizations policies and guidelines. 6.2 Individual roles/responsibilities are performed according to organizations policies and guidelines. 6.3 Problems/constraints encountered are resolved in accordance with organizations' policies and guidelines 6.4 Stakeholders are consulted based on company guidelines
7. Monitor activities on Environmental protection/Programs	7.1 Activities are periodically monitored and evaluated according to the objectives of the environmental Program 7.2 Feedback from stakeholders are gathered and considered in proposing enhancements to the program based on consultations 7.3 Data gathered are analyzed based on evaluation requirements 7.4 Recommendations are submitted based on the findings 7.5 Management support systems are set/established to sustain and enhance the program 7.6 Environmental incidents are monitored and reported to concerned/proper authorities
8. Analyze resource use	8.1 Resource consuming processes are identified 8.2 Quantity and nature of resource consumed is determined 8.3 Resource flow through different parts of a process is analysed 8.4 Wastes that can be possible resources are gathered
9. Develop resource Conservation plans	9.1 Efficient use of resources is applied 9.2 Causes of Low efficiency use of resources are mitigated 9.3 Plans for increasing the efficiency of resource use are established

RANGE

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

Variable	Range
1. PPE May include but are not limited to	• Mask • Gloves • Goggles • Safety hat • Overall • Hearing protector
2. Environmental pollution control measures may include but are not limited to:	• Methods for minimizing or stopping spread and ingestion of airborne particles • Methods for minimizing or stopping spread and ingestion of gases and fumes • 2.4 Methods for minimizing or stopping spread and ingestion of liquid wastes
3. Waste management Procedures may include but are not limited to:	• Sorting • Storing of items • Recycling of items • 4.3 Disposal of items
4. Resources may include but are not limited to:	• Electric • Water • Fuel • Telecommunications • Supplies • Materials
5. Workplace environmental hazards may include but are not limited to:	• Biological hazards • Chemical and dust hazards • Physical hazards
6. Organizational systems and procedures may include but are not limited to:	• Supply chain, procurement and purchasing • Quality assurance • Making recommendations and seeking approvals

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:

- Following storage methods of environmentally hazardous materials
- Following disposal methods of hazardous wastes
- Using PPE
- Practicing OSHS
- Complying environmental pollution control
- Observing solid waste management
- Complying methods of minimizing noise Pollution
- Complying methods of minimizing wastage
- Employing waste management procedures
- Economizing resource consumption
- Listing of resources used
- Measuring current usage of resources
- Identifying and reporting workplace environmental hazards
- Conveying all environmental issues
- Following environmental regulations
- Identifying environmental regulations
- Assessing procedures for assessing compliance
- Collecting information on environmental and resource efficiency systems and procedures, and Providing information to the work group
- Measuring and recording current resource usage
- Analysing and recording current purchasing strategies.
- Analysing current work processes to access information and data and Assisting identifying areas for improvement
- Analysing resource flow
- Determining efficiency of use/conversion of resources
- Determining causes of low efficiency of use
- Developing plans for increasing the efficiency of resource use
- Checking resource use plans
- Complying to regulations/licensing requirements
- Determining benefit/cost of plans
- Ranking proposals based on benefit/cost compared to limited resources
- Checking proposals meet regulatory requirements
- Monitoring implementation
- Making adjustments to plan and implementation
- checking new resource usage

Required Knowledge

The individual needs to demonstrate knowledge of:

- Storage methods of environmentally hazardous materials
- Disposal methods of hazardous wastes
- Usage of PPE Environmental regulations

- OSHS
- Types of pollution
- Environmental pollution control measures
- Different solid wastes
- Solid waste management
- Different noise pollution
- Methods of minimizing noise pollution
- Methods of minimizing wstage
- Waste management procedures
- Economizing of resource consumption
- Principle of 3Rs
- Types of resources
- Techniques in measuring current usage of resources
- Calculating current usage of resources
- Types of workplace environmental hazards
- Environmental regulations
- Environmental regulations applying to the enterprise.
- Procedures for assessing compliance with environmental regulations.
- Collection of information on environmental and resource efficiency systems and procedures,
- Measurement and recording of current resource usage
- Analysis and recording of current purchasing strategies.
- Analysis current work processes to access information and data Analysis of data and information
- Identification of areas for improvement
- Resource consuming processes
- Determination of quantity and nature of resource consumed
- Analysis of resource flow of different parts of the resource flow process
- Use/conversion of resources
- Causes of low efficiency of use
- Increasing the efficiency of resource use

- Inspection of resource use plans
- Regulations/licensing requirements
- Determine benefit/cost for alternative resource sources
- Benefit/costs for different alternatives
- Components of proposals
- Criteria on ranking proposals
- Regulatory requirements
- Proposals for improving resource efficiency
- Implementation of resource efficiency plans
- Procedures in monitor implementation
- Adjustments of implementation plan
- Inspection of new resource usage

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Controlled environmental hazard 1.2 Controlled environmental pollution 1.3 Demonstrated sustainable resource use 1.4 Evaluated current practices in relation to resource usage 1.5 Expressed knowledge of environmental legislations and industrial standard environmental practices 1.6 Resolved problems/ constraints encountered based on management standard procedures 1.7 Implemented and monitored environmental practices on a periodic basis as per company guidelines 1.8 Recommended solutions for the improvement of the Program 1.9 Monitored and reported to proper authorities any environmental incidents
2. Resource Implications	The following resources should be provided: 2.1 Workplace with storage facilities 2.2 Tools, materials and equipment relevant to the tasks (ex. Cleaning tools, cleaning materials, trash bags, etc.)

	2.3 PPE 2.4 Manuals and references 2.5 Legislation, policies, procedures, protocols and local ordinances relating to environmental protection 2.6 Case studies/scenarios relating to environmental Protection
3 Methods of Assessment	Competency in this unit may be assessed through: 3.1 Demonstration 3.2 Oral questioning 3.3 Written examination 3.4 Interview/Third Party Reports 3.5 Portfolio (citations/awards from GOs and NGOs, certificate of training – local and abroad) 3.6 Simulations and role-plays
4 Context of Assessment	Competency may be assessed in workplace or in a simulated workplace setting
5 Guidance information for assessment	5.1 Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

APPLY OCCUPATIONAL SAFETY AND HEALTH PRACTICES

UNIT CODE: CON/OS/BUT/BC/06/5/A

UNIT DESCRIPTION

This unit specifies the competencies required to lead the implementation of workplace safety and health program, procedures and policies/guidelines.

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. Identify workplace Hazards	1.1 ***Hazards*** in the workplace and/or its ***indicators*** of its presence are identified. 1.2 ***Evaluation and/or work environment*** measurements of OSH hazards/risk existing in the workplace is conducted by authorized personnel or agency. 1.3 ***OSH issues and/or concerns*** raised by workers are gathered.
2. Identify and implement appropriate control measures	2.1 ***Prevention and control measures***, including use of safety ***gears / PPE (personal protective equipment)*** for specific hazards are identified and implemented. 2.2 Appropriate ***risk controls*** based on result of OSH hazard evaluation is recommended. 2.3 ***Contingency measures***, including ***emergency procedures*** during workplace ***incidents and emergencies*** are recognized and established in accordance with organization procedures.
3. Implement OSH programs, procedures and policies/ guidelines	3.1 Information to work team about company OSH program, procedures and policies/guidelines are provided. 3.2 Implementation of OSH procedures and policies/

	guidelines are conducted. 3.3 Team members are trained and advised on OSH standards and procedures. 3.4 Procedures for maintaining ***OSH-related records*** are implemented

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. Hazards may include but are not limited to:	• Physical hazards • Biological hazards • Chemical hazards • Ergonomics • Psychological factors • Physiological factors • Safety hazards • Unsafe workers' act
2. Indicators may include but are not limited to:	• Increased of incidents of accidents, injuries • Increased occurrence of sickness or health complaints/ symptoms • Common complaints of workers related to OSH • High absenteeism for work-related reasons
3. Evaluation and/or work environment measurements may include but are not limited to:	• Health Audit • Safety Audit • Work Safety and Health Evaluation • Work Environment Measurements of Physical and Chemical Hazards
4. OSH issues and/or concerns may include but are not limited to:	• Workers' experience/observance on presence of work hazards • Unsafe/unhealthy administrative arrangements (prolonged work hours, no break time, constant overtime, scheduling of tasks) • Reasons for compliance/non-compliance to use of PPEs or other OSH procedures/policies/guidelines

5. Prevention and control measures may include but are not limited to:	• Eliminate the hazard • Isolate the hazard • Substitute the hazard with a safer alternative • Use administrative controls to reduce the risk • Use engineering controls to reduce the risk • Use personal protective equipment • Safety, Health and Work Environment Evaluation • Periodic and/or special medical examinations of workers
6. Safety gears /PPE (Personal Protective Equipment's) may include but are not limited to:	• Arm/Hand guard, gloves • Eye protection (goggles, shield) • Hearing protection (ear muffs, ear plugs) • Hair Net/cap/bonnet • Hard hat • Face protection (mask, shield) • Apron/Gown/coverall/jump suit • Anti-static suits • High-visibility reflective vest
7. Appropriate risk controls	• Eliminate the hazard altogether • Isolate the hazard from anyone who could be harmed • Substitute the hazard with a safer alternative • Use administrative controls to reduce the risk • Use engineering controls to reduce the risk • Use personal protective equipment
8. Contingency measures may include but are not limited to:	• Evacuation • Isolation • Decontamination • Emergency personnel
9. Emergency procedures may include but are not limited to:	• Fire drill • Earthquake drill • Basic life support/CPR • First aid • Spillage control • Decontamination of chemical and toxic • Disaster preparedness/management • Set of fire-extinguisher

10. Incidents and emergencies may include but are not limited to:	• Chemical spills • Equipment/vehicle accidents • Explosion • Fire • Gas leak • Injury to personnel • Structural collapse • Toxic and/or flammable vapors emission.
11. OSH-related Records may include but are not limited to:	• Medical/Health records • Incident/accident reports • Sickness notifications/sick leave application • OSH-related trainings obtained

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

- Communication
- Interpersonal
- Presentation
- Risk assessment
- Evaluation
- Critical thinking
- Problem solving
- Negotiation

Required Knowledge

The individual needs to demonstrate knowledge of:

- General OSH Principles
- Occupational hazards/risks recognition
- OSH organizations providing services on OSH evaluation and/or work environment measurements (WEM)
- National OSH regulations; company OSH policies and protocols
- Systematic gathering of OSH issues and concerns
- General OSH principles
- National OSH regulations
- Company OSH and recording protocols, procedures and policies/guidelines

- Training and/or counseling methodologies and strategies

EVIDENCE GUIDE

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

Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Identified hazards/risks in the workplace and/or its indicators. 1.2 Requested for evaluation and work environment measurements of OSH hazards/risk in the workplace. 1.3 Identified and implemented prevention and control measures, including use of PPE (personal protective equipment) 1.4 Recommended appropriate risk controls based on result of OSH hazard evaluation and OSH issues gathered. 1.5 Established contingency measures, including emergency procedures in accordance with organization procedures. 1.6 Provided information to work team about company OSH program, procedures and policies/guidelines. 1.7 Participated in the implementation of OSH procedures and policies/guidelines.
2. Resource implications	The following resources should be provided: 2.1 Workplace or assessment location. 2.2 OSH personal records. 2.3 PPE. 2.4 Health records
3. Methods of assessment	Competency may be assessed through: 3.1 Portfolio Assessment. 3.2 Interview. 3.3 Case Study/Situation. 3.4 Observation/Demonstration and oral questioning.
4. Context of assessment	Competency may be assessed in workplace or in a simulated workplace setting
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.

COMMON UNITS OF COMPETENCY

APPLY BASIC MATHEMATICS

UNIT CODE: CON/OS/BUT/BC/CU/01/5/A

UNIT DESCRIPTION:

This unit describes the competencies required in applying algebra, trigonometry, statistics, indices logarithms and ratio. It also involves performing geometrical calculations, business calculations, carrying out mensuration and plotting simple 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. Apply algebra	1.1 Calculations involving Indices are performed based on the concept 1.2 Linear equations are represented based on the concept 1.3 Scientific calculator is used in solving mathematical problems in line with manufacturer's manual 1.4 Simultaneous equations are performed based on mathematical rules 1.5 Simple algebraic equations are formed based on the concept 1.6 Simple algebraic equations are solved based on the concept
2. Apply trigonometry	2.1 Trigonometric ratios are derived based on trigonometric rules. 2.2 Calculations are performed based on trigonometric rules
3. Perform geometrical calculations	3.1 Areas of regular figures are calculated based on the given formulae 3.2 Areas of irregular figures are calculated based on concept 3.3 Apply Pythagoras' theorem based on the concept
4. Carry out basic mensuration	4.1 Various ***units of measurements*** are identified based on the course requirements 4.2 Units are converted based on best practices

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)***
	4.3 Perimeter and areas of regular ***figures*** are obtained based on known formulae 4.4 Area of irregular figures are obtained based on best practice 4.5 Volume and Surface area of solids are obtained based on given formulae
5. Apply statistics	5.1 Grouped and ungrouped data is identified and interpreted based on given sample 5.2 Ungrouped data is organized based on the concept 5.3 Data is represented in frequency tables based on the concept 5.4 The median, mode and mean of grouped and ungrouped data is calculated based on the concept 5.5 Data is presented in a chart form based on the concept
6. Plot simple graphs	6.1 A ***graph*** is plotted for given set of data based on data 6.2 Information from a given graph is interpreted based on data
7. Apply Indices and Logarithms	7.1 Converted numbers from one base to another 7.2 Applied the laws of indices in solving exponential equations 7.3 Applied the laws of logarithms in solving logarithmic equations
8. Apply Ratios	9.1 Differentiated between rational and irrational numbers 9.2 Expressed ratios as percentages 9.3 Solved problems involving direct and inverse proportions

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:	• Millimetres • Centimetres • Metres • Kilometres
2. Figures may include but not limited to:	• square • rectangle • triangle • polygons • circles
3. Graph may include but not limited to:	• linear graphs • bar graphs • pie chart • pictograph

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:

- Logical thinking
- Problem solving
- interpersonal
- Drawing
- sketching
- measuring skills

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 angles

- Types of tables and graphs
- Presentation

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: 1.1 Demonstrated ability to apply basic trigonometry based on trigonometric rules. 1.2 Carried out mensuration as per formulae. 1.3 Applied algebra as per algebraic concepts. 1.4 Performed geometrical calculations based on concepts. 1.5 Demonstrated knowledge of applied statistics in accordance with statistical concepts. 1.6 Plotted simple graphs as per provided data.
2. Resource Implications	The following resources should be provided: 2.1 Access to relevant or appropriately simulated environment where assessment can take place 2.2 Measuring equipment 2.3 Materials relevant to the proposed activity or tasks
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Written tests 3.2 Practical Tests 3.3 Oral Questioning
4. Context of Assessment	Competency may be assessed: 4.1 On-the-job 4.2 In a simulated workplace setting
5. 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: CON/OS/BUT/BC/CU/02/5/A

UNIT DESCRIPTION

This unit covers the competencies required to prepare and apply technical drawing. It involves selecting, using and maintaining drawing equipment and materials. It also involves developing plane geometry drawings, solid geometry drawings, pictorial and orthographic drawings and applying computer aided designs.

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	1.1 ***Drawing equipment*** are identified and gathered according to task requirements 1.2 ***Drawing materials*** are identified and gathered according to task requirements 1.3 Drawing equipment are used and maintained as per manufacturer's instructions 1.4 Drawing materials are used as per workplace procedures
2. Develop plane geometry drawings	2.1 Freehand sketching of different types of geometric forms and diagrams is conducted as per 2.2 Different types of lines used in drawing and their meanings are identified according to standard 2.3 Different types of ***geometric forms*** are constructed according to ***standard conventions*** 2.4 Different types of angles are constructed, measured and bisected according to principles of trigonometry
3. Develop solid geometry drawings	3.1 Pattern drawings are interpreted according to standard conventions 3.2 solid geometry drawings are constructed according to given plane geometry
4. Develop orthographic and pictorial drawings	4.1 Symbols and abbreviations are identified and interpreted according to standard drawing conventions 4.2 First and third angle orthographic drawings are interpreted and developed in accordance with the standard conventions

ELEMENT	PERFORMANCE CRITERIA *(Bold and italicised terms are elaborated in the Range)*
	4.3 Orthographic elevations are dimensioned in accordance with standard conventions 4.4 Isometric drawings are interpreted and developed in accordance with standard conventions 4.5 Oblique drawings are interpreted and developed in accordance to standard conventions
5. Apply computer Aided design	5.1 Plane geometry drawings are developed using CAD 5.2 Geometry drawings are developed using CAD 5.3 Orthographic drawings are developed using CAD

RANGE

Variable	Range
1. Drawing equipment may include but not limited to:	• Drawing boards • T squares • Set squares • drawing sets
2. Drawing materials may include but not limited to:	• Drawing paper • Pencils • Erasers • masking tapes • paper clips
3. Geometric forms may include but not limited to:	• Circles • Triangles • rectangles • parallelogram • polygons • pyramids • conic sections • prisms
4. Standard conventions may include but not limited to:	• Anatomy of engineering drawing (title block, coordinate grid system, revision block, notes and legends) • Drawing scale (paper size and drawing symbols) • International drawing standards

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
- Sketching
- Interpretation
- Communication
- Inter personal

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 patterns

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: 1.1 Selected, used and maintained drawing equipment and materials based on task requirements. 1.2 Constructed different types of geometric forms and angles in accordance with standard conventions. 1.3 Constructed solid geometry drawings based on provided plane geometry 1.4 Used symbols and abbreviations as per standard drawing conventions. 1.5 Developed geometric, plans and orthographic drawings using CAD

2. Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place. 2.2 Appropriately simulated environment where assessment can take place. 2.3 Resources relevant to proposed activity or task
3. Methods of Assessment	Competency may be assessed through: 3.1 Practical tests 3.2 Oral Questioning
4. Context of Assessment	Competency may be assessed: 4.1 On-the-job 4.2 In a simulated workplace setting
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

APPLY SCIENTIFIC PRINCIPLES

UNIT CODE: CON/OS/BUT/BC/CU/03/5/A
UNIT DESCRIPTION

This unit describes the competence in applying scientific principles. It involves applying principles of units of measurements, force, work, energy and power, friction, heat, acoustics, pressure in fluids, mechanical properties of materials and electrical principles.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA ***(Bold and italicized terms are elaborated in the Range)***
1 Apply principles of units of measurements	1.1 Units of measurements are identified based on task given 1.2 Units of measurements are converted based on standard conventions. 1.3 Units of measurements are applied based on work requirements
2 Apply principles of Force, work, energy and power	2.1 Force, work, energy and power are defined based on standard conventions. 2.2 Forms of energy are described based on the state of the matter 2.3 Energy is converted according to scientific principles 2.4 Simple calculations on work, energy and power are solved based on the task requirements
3 Apply principles of Friction	3.1 Friction is defined and interpreted based on standard conventions 3.2 The advantages and disadvantages of friction are identified based on scientific principles 3.3 Simple problems on friction are solved based on task requirements
4 Apply principles of heat	4.1 ***Sources of heat*** are identified based on scientific principles 4.2 Effects of heat on matter is identified based on scientific principles 4.3 ***Methods of heat transfer*** are identified and interpreted based on scientific principles
5 Apply principles of pressure in fluids	5.1 Density and variation of pressure is defined based on scientific principles 5.2 ***Laws*** are identified based on scientific principles 5.3 Simple calculations on pressure in liquids are performed based on scientific principles
6 Apply principles of acoustics	6.1 ***Sources of sound*** are identified based on scientific principles 6.2 Effects of sound on surrounding areas are identified based on scientific principles.

ELEMENT	PERFORMANCE CRITERIA *(Bold and italicized terms are elaborated in the Range)*
	6.3 Methods of sound insulation are identified and interpreted based on scientific principles
7 Apply mechanical properties of materials	7.1 ***Mechanical properties*** are identified and interpreted based on type of material 7.2 Advantages and disadvantages of materials are identified based on use of materials 7.3 Materials are tested based on type of material.
8 Apply electrical principles	8.1 ***Electrical principles*** are identified based on scientific principles 8.2 Electrical standards are interpreted based on international standards 8.3 Occupational safety and health practises are identified based on statutory and sector regulations. 8.4 Simple electrical circuits are identified based on international standards.

RANGE

Variable	Range may include but is not limited to:
1. Classification of matter may include but not limited to:	• Solids • Liquids • Gases
2. Sources of heat may include but not limited to:	• Solar • Biomass • Geothermal • Fuel • Electric
3. Sources of sound may include but not limited to:	• Mechanical movements • Fluid flow • Vibrations
4. Methods of heat transfer may include but not limited to:	• Conduction • Convection • Radiation
5. Laws may include but not limited to:	• Law of floatation • Archimedes principles

6. Mechanical properties may include but not limited to:	• Malleability • Strength • Hardness • Brittleness • Elasticity • Toughness • Ductility • Electrical conductivity
7. Electrical principles may include but not limited to:	• Voltage • Current • Power • Magnetism

REQUIRED KNOWLEDGE

- Construction materials
- Measurement
- Mechanical properties
- Friction
- Force, work, energy and power
- Principles of heat
- Pressure in fluids
- Basic electricity

SKILLS

- Solving problems
- Analytical
- Interpretation
- Interpersonal
- Computational skills
- Critical thinking

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Applied units of measurements as per work requirements 1.2 Calculated force, work, energy and power based on work requirements. 1.3 Solved problems of friction based on task requirements

	1.4 Applied principles of heat transfer based on task requirements 1.5 Applied principles of pressure in fluids based on task requirements. 1.6 Managed sound based on principles of sound acoustics. 1.7 Tested mechanical properties of materials based on type of material 1.8 Applied electrical standards based on electrical principles
2. Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place. 2.2 Appropriately simulated environment where assessment can take place. 2.3 Resources relevant to proposed activity or task
3. Methods of Assessment	Competency may be assessed through: 3.1 Written text 3.2 Interview 3.3 Oral Questioning 3.4 Practical Tests
4. Context of Assessment	Competency may be assessed: 4.1 On-the-job 4.2 In a simulated workplace setting
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

CORE UNITS OF COMPETENCY

PERFORM CONSTRUCTION SITE PRELIMINARY WORKS

UNIT CODE: CON/OS/BUT /CR/01/5/A

UNIT DESCRIPTION

This Unit describes the competencies required to perform site preliminary works**.** It involves clearing building site, hoard/fence construction, laying out building site, interpreting building drawing and setting out building structure**.**

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. Clear building site	1.1 Area to be cleared is identified according to the site plan. 1.2 Features to be cleared are identified as per the building site 1.3 ***Method of clearance*** is determined as per the building site condition. 1.4 Tools and equipment for clearance are identified. 1.5 Access roads are prepared according to the site plan
2. Erect Hoard/Fence structure	2.1 Site is fenced according to the current building standards. 2.2 Site is hoarded according to the current building standards. 2.3 ***Materials*** for fencing/hoarding are identified. 2.4 Type of hoarding are identified as per the specification.
3. Lay out the building site	3.1 Position of the proposed project is determined as per the site plan. 3.2 ***Site hutments*** are positioned as per the site. 3.3 ***Services*** are installed as per the site requirement. 3.4 Access Road is created as per the site layout and local authority provisions
4. Interpret building drawing	4.1 Symbols and abbreviations are identified according to the standards. 4.2 Dimensions are identified according to the metric and imperial system. 4.3 Orientation of the building on site is located as per the building drawings. 4.4 ***Components of building drawings*** are identified according to building specifications. 4.5 Site plan is interpreted as per the drawing.
5. set out a building structure	5.1 Tools and equipment for setting out are identified as per the job requirement. 5.2 ***Method*** of setting out is identified according to the construction site. 5.3 Building structure is positioned based on site plan

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. Method of clearance may include but not limited to:	• Grubbing • Burning • Dozing • Hand clearing
2. Materials may include but not limited to:	• Timber • Iron sheets • Wire mesh • Steel • Plastics moulds • concrete
3. site hutments may include but not limited to:	• Material store(s) • Washroom(s) • Changing room • Security office • Preparation room Site office • Parking shade(s)
4. Services may include but not limited to:	• Water point • Telephone • Gas • Power • Health • Security • Lighting
5. Components of building drawings may include but not limited to:	• Plan • Elevation • Sections • Material list
6. Method of setting out may include but not limited to:	• By coordinates • 3-4-5 • Mechanical • Builders square

REQUIRED KNOWLEDGE AND SKILLS

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

- Occupational Health and Safety
- Building Drawing
- Construction plants and equipment
- Construction materials

- General Building Construction
- Physical planning
- Environment Management
- Site and workshop management
- Carpentry and Joinery
- Plumbing

Required skills

The individual needs to demonstrate the following skills:

- Communication skills
- Problem solving skills
- Analytical skills
- Numeracy skills
- 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: 1.1 Cleared building site as per task requirements. 1.2 Created access roads according to the site plan 1.3 Fenced and hoarded building site as per building standards. 1.4 Positioned proposed project as per the site plan. 1.5 Installed services as per the site requirement. 1.6 Set out building according as per construction site.
2. Resource implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place. 2.2 Appropriately simulated environment where assessment can take place. 2.3 Resources relevant to proposed activity or task.
3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Practical assignment 3.2 Written 3.3 Oral interview 3.4 Demonstrations 3.5 Observation
4. Context of assessment	Competency may be assessed: 4.1 On-the-job 4.2 In a Simulated workplace setting
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.

EXECUTE BUILDING SUBSTRUCTURE WORKS

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

UNIT DESCRIPTION:

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

ELEMENTS AND PERFORMANCE CRITERIA

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

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

RANGE

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

Variable	Range
1. Type of soil may include but not limited to:	• Firm soil • Dry loose soil • Wet loose soil • Hard soil
2. Excavation plant, tools and equipment may include but not limited to:	• excavator • Trencher • Front end shovel • Back actor • Mattock
3. Foundation may include but not limited to:	• Strip foundation • Pad foundation • stepped foundation • Raft/ mat foundation • Pile foundation

4. Planking and strutting may include but not limited to:	• Poling boards • Struts • Walling board • Wedge
5. Dewatering may include but not limited to:	• Perimeter trench • Well points • Osmosis • Freezing
6. Concrete mixing materials may include but not limited to:	• Binders • Fine aggregates • coarse aggregates • Additives and admixtures
7. Concrete mixing tools and equipment may include but not limited to:	• Spade • Wheel barrows • Trowels • Buckets • Mixer
8. Concrete placing method may include but not limited to:	• Mechanical • Manual
9. Damp proofing material may include but not limited to:	• DPM • DPC • Bituminous felt • Asphalts • Sheet metal • Stone slate

REQUIRED KNOWLEDGE AND SKILLS

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

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

Required skills:

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

EVIDENCE GUIDE

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

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Determined type of soil according to standard soil testing procedures. 1.2 Excavated foundation trench as per engineer's specifications. 1.3 Erected safety barriers next to the excavation as per building regulations 1.4 Erected planking and strutting as per site conditions. 1.5 Constructed and cured foundation walls as per standard building procedures. 1.6 Constructed and cured solid ground floor as per standard building procedures
2. Resource implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place. 2.2 Appropriately simulated environment where assessment can take place. 2.3 Resources relevant to proposed activity or task.
3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Practical assignment 3.2 Written 3.3 Oral interview 3.4 Demonstrations 3.5 Observation
4. Context of assessment	Competency may be assessed: 4.1 On-the-job 4.2 In a simulated workplace setting
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.

EXECUTE BUILDING SUPERSTRUCTURE WORKS

UNIT CODE: CON/OS/BUT /CR/03/5/A

UNIT DESCRIPTION:

This Unit describes the competencies required to execute superstructure works. It involves setting out and constructing superstructure walls and columns, setting out and casting superstructure beams and suspended slabs, and constructing stair structure.

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. Set out wall and columns	1.1 Dimensions for superstructure walls and columns are transferred from the profiles as per working drawings. 1.2 Kickers for columns are positioned and cast as per specifications. 1.3 ***Method of setting out*** is identified. 1.4 ***Tools for setting out*** are identified according to ***setting out method.*** 1.5 Wall and column measurements are taken as per the building drawing.
2. Construct superstructure wall and columns	2.1 Kickers for columns are positioned and cast as per specifications. 2.2 Walls, columns and door openings dimensions are marked on the solid ground floor according to the design details 2.3 Building wall mortar is prepared as per building codes 2.4 DPC is laid as per specifications 2.5 Building wall courses are laid according to prescribed bonding methods, building regulations and design details 2.6 Windows and ventilator openings are determined as per design details 2.7 Dimensions for superstructure walls and columns are transferred from the profiles as per working drawings 2.8 ***Method of setting*** out is identified 2.9 ***Tools for setting*** out are identified according to setting out method 2.10 Wall and column measurements are taken as per the building drawing.
3. Set out superstructure beams and suspended slabs	3.1 Levels for slab headroom are determined. 3.2 Levels for beam headroom are determined. 3.3 Formwork to sides and soffits of beams is erected. 3.4 Formwork to soffits for suspended slabs is erected.
4. Construct stair structure	4.1 ***Type of stair*** is identified as per working drawing. 4.2 Setting out is executed as per specifications 4.3 Formwork is erected as per specifications 4.4 ***Reinforcement bars*** are fixed as per structural design requirement's

	4.5 Concrete is casted according to Engineer's specification 4.6 Curing is done as per the building standards
5. Cast suspended slab and beams	5.1 Reinforcement bars are positioned as per structural design drawings 5.2 ***Concrete materials*** are mixed as per design ratio requirement. 5.3 Mixed concrete is placed and compacted as per construction regulations 5.4 Concrete is cured as per the construction regulations

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. Method of setting out include but are not limited to:	• Grabbing • Burning • Dozing • Hand clearing
2. Tools for setting out include but are not limited to:	• Building line • Hammers • Pegs • Spirit level • Tape measure • Panga • lime
3. setting out method include but are not limited to:	• 3-4-5 • Mechanical method • Builders square
4. Stair include but are not limited to:	• Spiral • Dogs leg • Straight flight • Quarter turn
5. Reinforcement bars include but are not limited to:	• Main bars • Distribution bar • links/ Stirrups • Top reinforcement • Bottom reinforcement
6. Concrete materials include but are not limited to:	• Binders • Fine aggregates • coarse aggregates • Additives and admixtures

REQUIRED KNOWLEDGE AND SKILLS

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

- Building Drawing
- Mensuration
- Construction plants and equipment
- Construction materials
- Concrete and motar mix ratios
- Curing
- Use of building tools and equipnment
- Batching
- Formwork
- Scaffolding

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: 1.1 Constructed out wall and columns as per standards building procedure and designs. 1.2 Laid building wall courses based on building regulations and design details 1.3 Laid superstructure beams and slabs as per building design and building regulations.
2. Resource implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place. 2.2 Appropriately simulated environment where assessment can take place. 2.3 Resources relevant to proposed activity or task.

3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Practical assignment 3.2 Written 3.3 Oral interview 3.4 Demonstrations 3.5 Observation
4. Context of assessment	Competency may be assessed: 4.1 On-the-job 4.2 In a simulated workplace setting
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.

CONSTRUCTION ROOF STRUCTURE

UNIT CODE: CON/OS/BUT /CR/04/5/A

UNIT DESCRIPTION:

This Unit describes the competencies required to execute roof construction. It involves identifying type of roof, interpreting roof plan, performing setting out, constructing trusses and executing roof finishes.

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. Identify and interpret type of roof	1.1 ***Type of the roof*** is identified as per specification 1.2 ***Members*** are identified as per the roof plan. 1.3 ***Roof covering material***s are identified as per the specification.
2. Perform Roof setting out	2.1 ***Tools and equipment*** for setting out are identified as per the roof specification. 2.2 Method of setting out is identified according to the roof specification. 2.3 Roof is set out as per job requirement
3. Construct truss structure	3.1 ***Joints*** are cut as per the specifications. 3.2 Members are assembled as per the specifications 3.3 Trusses are erected as per job requirement 3.4 Purlins are fixed as per the specification
4. Execute roof finishes	4.1 Fascia boards are fixed as per specification 4.2 Roof covering is fixed as per the specification 4.3 ***Rain water goods*** are installed

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. Type of the roof include but are not limited to:	• Hipped roof • Gable roof • lean to roof
2. Members include but are not limited to:	• Kingpost • Queen post • Rafters • Tie beam • Wall plates • Fascial boards • Strut and ties • Purlin

	• Battens
3. Roof covering materials include but are not limited to:	• Thatches • Iron sheets • Bricks tiles • Concrete • Shingles
4. Tools and equipment include but are not limited to:	• Hand tools • Strings • Level
5. Joints include but are not limited to:	• Birds mouth • Scarf • Half lap • Mitre • Plumb cut
6. Rain water goods include but are not limited to:	• Gutters • Down pipes • Swan neck • Shoe • Elbow • Bends • Gutter ends • Connectors • Gutter holders

REQUIRED KNOWLEDGE AND SKILLS

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

Required knowledge

The individual needs to demonstrate knowledge of:

- Occupational Health and Safety
- Technical Drawing
- Building Drawing
- Mensuration
- Construction plants and equipment
- Construction materials
- General Building Construction
- Site and workshop management
- 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
- Analytical

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: 1.1 Identified type of the roof as per specification 1.2 Identified members as per the roof plan. 1.3 Cut joints as per specifications 1.4 Fixed roof covering as per the specification 1.5 Installed rain water goods.
2. Resource implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place. 2.2 Appropriately simulated environment where assessment can take place. 2.3 Resources relevant to proposed activity or task.
3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Practical assignment 3.2 Written 3.3 Oral interview 3.4 Demonstrations 3.5 Observation
4. Context of assessment	Competency may be assessed: 4.1 On-the-job 4.2 In a simulated workplace setting
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.

INSTALL DOORS AND WINDOWS

UNIT CODE: CON/OS/BUT /CR/05/5/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 window shutters, 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	1.1 Door and window schedule is interpreted as per working drawing 1.2 Door and Window frames are costed as per job requirement 1.3 Door and window frames are fixed in position according to specification
2. Construct and fix door and window shutters	2.1 Door and window ***shutters*** are identified according to the specifications 2.2 Door and window shutters are constructed according to specification 2.3 Doors and windows are hanged in position according to specifications
3. Fix iron mongeries	3.1 ***Iron mongeries*** are identified as per specification 3.2 Iron mongeries are fitted as per specification 3.3 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 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: 1.1 Installed door and window frames 1.2 Identified door and window shutters according to the specifications. 1.3 Constructed door and window shutters are according to specification. 1.4 Fixed iron mongeries.

2. Resource implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place. 2.2 Appropriately simulated environment where assessment can take place. 2.3 Resources relevant to proposed activity or task.
3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Practical assignment 3.2 Written 3.3 Oral interview 3.4 Demonstrations 3.5 Observation
4. Context of assessment	Competency may be assessed: 4.1 On-the-job 4.2 In a simulated workplace setting
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.

PERFORM BUILDING FINISHES

UNIT CODE: CON/OS/BUT /CR/06/5/A

UNIT DESCRIPTION:

This unit describes the competencies required to perform building finishes. It involves performing wall plastering and rendering, applying floor finishes, executing ceiling finishes, applying paint finishes and installing fixtures and fittings.

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)***
• Perform wall plastering and rendering	1.1 ***Wall Finishing materials*** are selected as per client specifications and building code. 1.2 Finishing ***tools and equipment*** are assembled. 1.3 Wall backgrounds are prepared to receive ***wall finish***. 1.4 Wall finish is applied as per client specification and building code
• Apply floor finishes	2.1 ***Floor Finishing materials*** are selected as per client specifications and building code. 2.2 Finishing ***tools and equipment*** are assembled. 2.3 Floor backgrounds are prepared to receive ***floor finish***. 2.4 Floor finish is applied as per client specification and building code
• Execute ceiling finishes	3.1 ***Ceiling Finishing materials*** are selected as per client specifications and building code. 3.2 Finishing ***tools and equipment*** are assembled. 3.3 Ceiling backgrounds are prepared to receive ceiling finish. 3.4 Ceiling finish is applied as per client specification and building code
• Apply paint finishes	4.1 ***Painting materials*** are selected as per client specification. 4.2 ***Painting tools*** and equipment are assembled as per painting method. 4.3 Painting surface is prepared as per the building code 4.4 Paint is mixed as per client specification and producer specification. 4.5 Paint is applied as per the painting procedure. 4.6 Painted surfaces are protected.
• Install fixtures and fittings	5.1 Fixture and fitting schedule is interpreted as per working drawing 5.2 Material schedule is prepared as per the working drawings 5.3 Fixtures and fittings are constructed as per the fitting procedure. 5.4 Fixtures and fittings are installed as per design requirement. 5.5 ***Iron mongeries*** are identified and fitted as per specification

	5.6 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. ***Wall Finishing materials*** include but are not limited to:	• Mortar • Paint • Tiles • Claddings • Wall papers
2. Tools and equipment	• Hand tools • Spray gun • Grout sprayer
3. Wall finish.	• Tilling • Cladding • Plastering and Rendering
4. Floor Finishing materials	• Terrazzo • Screed • Tiles • Timber • Epoxy Paste • Granites • Marbles • Mazzeras
5. Ceiling Finishing materials	• Ceiling boards • Gypsum • PVC • TNG
6. Painting tools and materials	• Thinners • Paints • Rollers • Brushes • Spray guns

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: 1.1 Prepared wall backgrounds as per client specifications and building code. 1.2 Applied Wall finish as per client specification and building code 1.3 Prepared floor backgrounds as per client specifications and building code. 1.4 Applied floor finish as per client specification and building code 1.5 Prepared ceiling backgrounds as per client specifications and building code. 1.6 Applied ceiling finish as per client specification and building code 1.7 Prepared painting surface as building code 1.8 Applied paint as per the painting procedure 1.9 Protected painted surfaces as per painting procedure 1.10 Installed fixtures and fittings as per design requirement.
2. Resource implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place. 2.2 Appropriately simulated environment where assessment can take place. 2.3 Resources relevant to proposed activity or task.

3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Practical assignment 3.2 Written 3.3 Oral interview 3.4 Demonstrations 3.5 Observation
4. Context of assessment	Competency may be assessed: 4.1 On-the-job 4.2 In a simulated workplace setting
5. 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: CON/OS/BUT /CR/07/5/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	1.1 Area for landscaping is determined in accordance with the site layout 1.2 Landscaping ground is prepared as per design specifications 1.3 vegetative features are planted as per the landscape design 1.4 Irrigation method is determined as per landscape design 1.5 ***Beautification*** is carried out as per design specifications
2. Construct drainage system	2.1 Drainage drawings are interpreted as per the design requirement 2.2 ***Drainage channels*** are excavated as per the drawing 2.3 Backfilling, Levelling and compacting is done as specification 2.4 ***Drainage pipes*** are laid as per civil engineering drawings 2.5 Drainage channels and collection chambers are constructed according to civil engineering drawings
3. Lay external paving	3.1 Ground is surveyed to determine topography 3.2 Ground is excavated to the required depth according to engineers' specification. 3.3 The base is prepared in accordance with civil engineers' specifications 3.4 Levelling dust is spread in accordance with civil engineers' specifications 3.5 Kerbs stones and channels are laid as per the specification. 3.6 ***External paving*** is laid as per civil engineers' specifications. 3.7 Marking is done as per directional requirement.
4. Construct gates and fences	4.1 Gate location and orientation is determined according to site layout. 4.2 Gate measurements are determined according to the specifications 4.3 ***Gate supporting systems*** are constructed according to codes of practice 4.4 Gate is procured and installed as per design measurements

	4.5 ***Perimeter fence*** is constructed as per design requirement. 4.6 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
2. Drainage channels include but are not limited to:	• Open channels • Closed channels
3. Drainage pipes include but are not limited to:	• concrete pipes • PVC pipes • GI pipes • PPR pipes
4. External paving include but are not limited to:	• Tarmac • Concrete blocks • Clay • Ceramic • Rubble stones • Paving slabs
5. 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: 1.1 Prepared landscaping ground as per design specifications 1.2 Performed beautification as per design specifications 1.3 Excavated drainage channels as per the drawing. 1.4 Laid drainage pipes as per civil engineering drawings. 1.5 Laid external paving as per civil engineers' specifications. 1.6 Constructed gate supporting systems according to codes of practice. 1.7 Constructed perimeter fence as per design requirement. 1.8 Installed security equipment as per design requirement
2. Resource implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place. 2.2 Appropriately simulated environment where assessment can take place. 2.3 Resources relevant to proposed activity or task.
3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Practical assignment 3.2 Written 3.3 Oral interview 3.4 Demonstrations 3.5 Observation

4. Context of assessment	Competency may be assessed: 4.1 On-the-job 4.2 In a simulated workplace setting
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.