



# COMPETENCY STANDARD

## Plumbing

Level: 02

Construction Sector

Competency Standard Code: CS-CON-Plmb-L2-EN-V1



**National Skills Development Authority**  
**Prime Minister's Office**  
**Government of the People's Republic of Bangladesh**



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National Skills Development Authority

Prime Minister's Office

Level: 10-11, Biniyog Bhaban,

E-6 / B, Agargaon, Sher-E-Bangla Nagar Dhaka-1207, Bangladesh.

Email: ec@nsda.gov.bd

Website: www.nsga.gov.bd.

National Skills Portal: <http://skillsportal.gov.bd>

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This Competency Standard for **Plumbing** is a document for the development of curricula, teaching and learning materials, and assessment tools. It also serves as the document for providing training consistent with the requirements of industry in order to meet the qualification of individuals who graduated through the established standard via competency-based assessment for a relevant job.

This document has been developed by NSDA in association with **Construction Sector** ISC, industry representatives, academia, related specialist, trainer and related employee.

Public and private institutions may use the information contained in this standard for activities benefitting Bangladesh.

## Introduction

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The NSDA aims to enhance an individual's employability by certifying completeness with skills. NSDA works to expand the skilling capacity of identified public and private training providers qualitatively and quantitatively. It also aims to establish and operationalize a responsive skills ecosystem and delivery mechanism through a combination of well-defined set of mechanisms and necessary technical supports.

Key priority economic growth sectors identified by the government have been targeted by NSDA to improve current job skills along with existing workforce to ensure required skills to industry standards. Training providers are encouraged and supported to work with industry to address identified skills and knowledge to enable industry growth and increased employment through the provision of market responsive inclusive skills training program. "**Plumbing**" is selected as one of the priority occupations of **Construction Sector**. This standard is developed to adopt a demand driven approach to training with effective inputs from Industry Skills Councils (ISC's), employer associations and employers.

Generally, a competency standard informs curriculum, learning materials, assessment and certification of trainees enrolled in Skills Training. Trainees who successfully pass the assessment will receive a qualification in the National Skills Qualification Framework (NSQF) under Bangladesh National Qualification Framework (BNQF) and will be listed on the NSDA's online portal.

This competency standard is developed to improve skills and knowledge in accordance with the job roles, duties and tasks of the occupation and ensure that the required skills and knowledge are aligned to industry requirements. A series of stakeholder consultations, workshops were held to develop this document.

The document also details the format, sequencing, wording and layout of the Competency Standard for an occupation which is comprised of Units of Competence and its corresponding Elements.

## Overview

A competency standard is a written specification of the knowledge, skills and attitudes required for the performance of an occupation, trade or job corresponding to the industry standard of performance required in the workplace.

The purpose of a competency standards is to:

- provide a consistent and reliable set of components for training, recognising and assessing people's skills, and may also have optional support materials
- enable industry recognised qualifications to be awarded through direct assessment of workplace competencies
- encourage the development and delivery of flexible training which suits individual and industry requirements
- encourage learning and assessment in a work-related environment which leads to verifiable workplace outcomes

Competency standards are developed by a working group comprised of representative from NSDA, Key Institutions, ISC, and industry experts to identify the competencies required of an occupation in **Construction Sector**.

Competency standards describe the skills, knowledge and attitude needed to perform effectively in the workplace. CS acknowledge that people can achieve technical and vocational competency in many ways by emphasizing what the learner can do, not how or where they learned to do it.

With competency standards, training and assessment may be conducted at the workplace or at training institute or any combination of these.

Competency standards consist of a number of units of competency. A unit of competency describes a distinct work activity that would normally be undertaken by one person in accordance with industry standards.

Units of competency are documented in a standard format that comprises of:

- unit title
- nominal duration
- unit code
- unit descriptor
- elements and performance criteria
- variables and range statement
- curricular content guide
- assessment evidence guides

Together, all the parts of a unit of competency:

- describe a work activity
- guide the assessor to determine whether the candidate is competent or not yet competent

The ensuing sections of this document comprise of a description of the relevant occupation, trade or job with all the key components of a unit of competency, including:

- a chart with an overview of all Units of Competency for the relevant occupation, trade or job including the Unit Codes and the Unit of Competency titles and corresponding Elements
- the Competency Standard that includes the Unit of Competency, Unit Descriptor, Elements and Performance Criteria, Range of Variables, Curricular Content Guide and Assessment Evidence Guide.

## Competency Standards for National Skills Certificate – Level-2 in Plumbing in Construction Sector

### Level Descriptors of NSQF (BNQF 1-6)

Level & Job Classification	Knowledge Domain	Skills Domain	Responsibility Domain
6-Mid-Level Manager/ Sub Assistant Engineer	Comprehensive actual and theoretical knowledge within a specific work or study area with an awareness of the validity and limits of that knowledge, able to analyse, compare, relate and evaluate.	Specialised and wider range of cognitive and practical skills required to provide leadership in the development of creative solutions to defined problems. Communicate professional issues and solutions to the team and to external partners/users.	Work under broad guidance and self-motivation to execute strategic and operational plan/s. Lead lower-level management. Diagnose and resolve problems within and among work groups.
5-Supervisor	Broad knowledge of the underlying, concepts, principles, and processes in a specific work or study area, able to scrutinize and break information into parts by identifying motives or causes.	Broad range of cognitive and practical skills required to generate solutions to specific problems in one or more work or study areas. Communicate practice-related problems and possible solutions to external partners.	Work under guidance of management and self-direction to resolve specific issues. Lead and take responsibility for the work and actions of group/team members. Bridge between management.
4-Highly Skilled Worker	Broader knowledge of the underlying, concepts, principles, and processes in a specific work or study area, able to solve problems to new situations by comparing and applying acquired knowledge.	A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying the full range of methods, tools, materials and information. Communicate using technical terminology and IT technology with partners and users as per workplace requirements.	Work under minimal supervision in specific contexts in response to workplace requirements. Resolve technical issues in response to workplace requirements and lead/guide a team/ group.
3-Skilled Worker	Moderately broad knowledge in a specific work or study area, able to perceive ideas and abstract from drawing and design according to workplace requirements.	Basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools. Communicate with his team and limited external partners upholding the values, nature and culture of the workplace	Work or study under supervision with considerable autonomy. Participate in teams and responsible for group coordination.
2-Semi Skilled Worker	Basic understanding of underpinning knowledge in a specific work or study area, able to interpret and apply common occupational terms and instructions.	Skills required to carry out simple tasks, communicate with his team in the workplace presenting and discussing results of his work with required clarity.	Work or study under supervision in a structured context with limited scope of manipulation
1 –Basic Skilled Worker	Elementary understanding of ability to interpret the underpinning knowledge in a specific study area, able to interpret common occupational terms and instructions.	Specific Basic skills required to carry out simple tasks. Interpret occupational terms and present the results of own work within guided work environment/ under supervision.	Work under direct supervision in a structured context with limited range of responsibilities.

## List of Abbreviations

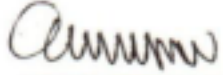

<b>General</b>	
NSDA	National Skills Development Authority
BMET	Bureau of Manpower Employment and Training
ILO	International Labor Organization
ISC	Industry Skills Council
NPVC	National Pre-Vocation Certificate
NSQF	National Skills Qualifications Framework
PPP	Public Private Partnership
SCVC	Standards and Curriculum Validation Committee
SEIP	Skills for Employment Investment Program
STP	Skills Training Provider
UoC	Unit of Competency
<b>Occupation Specific</b>	
FPS	Foot, Pound, Second
MKS	Meter, Kilogram, Second
CON	Construction
OSH	Occupational safety and health
PPE	Personal protective equipment





## Approval of Competency Standard

### Members of the Approval Committee:

Member	Signature
<b>Dulal Krishna Saha</b> Executive Chairman (Secretary) National Skills Development Authority	 31.01.21
<b>Md. Nurul Amin</b> Member (Admin & Finance) and Member (Skills Standard & Certification) Joint Secretary National Skills Development Authority	 31.01.21
<b>Alif Rudaba</b> Member (Planning & Research) and Member (Coordination & Evaluation) Joint Secretary National Skills Development Authority	 30/1/2021

  
31.01.21

**Dulal Krishna Saha**  
Executive Chairman (Secretary)  
National Skills Development Authority  
Date:

  
**Engr. B. M. Shariful Islam**  
Deputy Director (Skills Standard)  
Principal  
National Skills Development Authority (NSDA)  
Prime Minister's Office, Dhaka



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**National Competency Standards for National Skill Certificate – 2 in  
Plumbing**

**Course Structure**

SL	Unit Code and Title		UoC Level	Nominal Hours
<b>Generic Competencies</b>				<b>65</b>
1.	GU-02-L1-V1	Apply Occupational Safety and Health (OSH) Procedure in the Workplace	2	15
2.	GU-03-L2-V1	Communicate in the Workplace	2	30
3.	GU-04-L1-V1	Work in a Team Environment	2	20
				<b>40</b>
4.	SU-CON-01-L2-V1	Work in the Construction Sector	2	20
5.	SU-CON-02-L2-V1	Interpret Drawings and Specifications in Construction Manuals	2	20
<b>Occupation Specific Competencies</b>				<b>255</b>
6.	OU-CON-Plmb-01-L2-V1	Use Hand Tools and Power Tools	2	20
7.	OU-CON-Plmb-02-L2-V1	Fabricate and Prepare Pipes for Installation	2	25
8.	OU-CON-Plmb-03-L2-V1	Make Pipe Joints	2	25
9.	OU-CON-Plmb-04-L2-V1	Perform Cutting and Penetration for Plumbing Works	2	45
10	OU-CON-Plmb-05-L2-V1	Install Water Supply and Waste Water Pipeline	2	30
11	OU-CON-Plmb-06-L2-V1	Install Plumbing Fixtures	2	85
12	OU-CON-Plmb-07-L2-V1	Maintain and Service Plumbing Works	2	25
<b>Total Nominal Learning Hours</b>				<b>360</b>

**Units & Elements at a Glance:**

**Generic Units of Competencies (65 Hours)**

<b>Code</b>	<b>Unit of Competency</b>	<b>Elements of Competency</b>	<b>Duration (Hours)</b>
GU-02-L1-V1	Apply Occupational Safety and Health (OSH) Procedure in the Workplace	<ol style="list-style-type: none"> <li>1. Identify OSH policies and procedures</li> <li>2. Follow OSH procedure</li> <li>3. Report hazards and risks</li> <li>4. Respond to emergencies</li> <li>5. Maintain personal well-being</li> </ol>	15
GU-03-L2-V1	Communicate in the Workplace	<ol style="list-style-type: none"> <li>1. Receive verbal instructions.</li> <li>2. Interpret verbal and written information/ instruction</li> <li>3. Convey instructions using verbal and written forms of communication</li> <li>4. Complete written documentation</li> <li>5. Participate in work place meetings and discussions.</li> </ol>	30
GU-03-L2-V1	Work in a Team Environment	<ol style="list-style-type: none"> <li>1. Define team role and scope.</li> <li>2. Identify individual role and responsibility.</li> <li>3. Participate in team discussions.</li> <li>4. Work as a team member.</li> </ol>	20
<b>Total Hour</b>			<b>65</b>

**Sector Specific Unit of Competencies (40 Hours)**

Code	Unit of Competency	Elements of Competency	Duration (Hours)
SU-CON-01-L2-V1	Work in the Construction Sector	<ol style="list-style-type: none"><li>1. Describe the organizational structure within the sector.</li><li>2. Identify processes and procedures.</li><li>3. Identify tools, equipment and materials.</li><li>4. Identify workplace requirements.</li><li>5. Organize own workload.</li><li>6. Practice OHS.</li></ol>	20
SU-CON-02-L2-V1	Interpret Drawings and Specifications in Construction Manuals	<ol style="list-style-type: none"><li>1. Identify information from manuals</li><li>2. Identify drawings and specifications</li><li>3. Interpret drawings and specifications</li><li>4. Store manuals</li></ol>	20
<b>Total Hours</b>			<b>40</b>

**Occupation Specific Unit of Competencies (255 Hours)**

<b>Code</b>	<b>Unit of Competency</b>	<b>Elements of Competency</b>	<b>Hours</b>
OU-CON-Plmb-01-L2-V1	Use Hand Tools and Power Tools	<ol style="list-style-type: none"> <li>1. Select tools.</li> <li>2. Use hand tools.</li> <li>3. Use power tools.</li> <li>4. Perform basic preventive maintenance.</li> <li>5. Maintain workplace cleanliness and Store tools.</li> </ol>	20
OU-CON-Plmb-02-L2-V1	Fabricate and prepare pipes for installation	<ol style="list-style-type: none"> <li>1. Practice OSH</li> <li>2. Collect tools, equipment and materials</li> <li>3. Cut pipes</li> <li>4. Cut threads</li> <li>5. Maintain workplace cleanliness and Store tools.</li> </ol>	25
OU-CON-Plmb-03-L2-V1	Make Pipe Joints	<ol style="list-style-type: none"> <li>1. Practice OSH</li> <li>2. Collect tools, equipment and materials</li> <li>3. Make Joints and fittings</li> <li>4. Maintain workplace cleanliness and Store tools.</li> </ol>	25
OU-CON-Plmb-04-L2-V1	Perform Cutting and Penetration for Plumbing Works	<ol style="list-style-type: none"> <li>1. Practice OSH</li> <li>2. Cut wall and floor</li> <li>3. Lay-out pipe</li> <li>4. Maintain workplace cleanliness and Store tools.</li> </ol>	45
OU-CON-Plmb-05-L2-V1	Install Water Supply and Waste Water Pipeline	<ol style="list-style-type: none"> <li>1. Practice OSH</li> <li>2. Collect tools, equipment and materials</li> <li>3. Cut threads</li> <li>4. Fix joints and fittings for pipe</li> <li>5. Install pipe</li> <li>6. Maintain workplace cleanliness and Store tools.</li> </ol>	30
OU-CON-Plmb-06-L2-V1	Install Plumbing Fixtures	<ol style="list-style-type: none"> <li>1. Practice OSH</li> <li>2. Collect tools, equipment and materials</li> <li>3. Install fixtures</li> <li>4. Maintain workplace cleanliness and Store tools.</li> </ol>	85
OU-CON-Plmb-07-L2-V1	Maintain and Service Plumbing Works	<ol style="list-style-type: none"> <li>1. Practice OSH</li> <li>2. Select and Collect tools, equipment and materials</li> <li>3. Maintain and service of pipe fittings and fixtures</li> <li>4. Clear clogged pipes and drains.</li> <li>5. Maintain workplace cleanliness and Store tools.</li> </ol>	25
<b>Total Hours</b>			<b>260</b>



# **Generic Unit of Competencies**

<b>Unit Code and Title</b>	<b>GU-02-L1-V1: Apply Occupational Safety and Health (OSH) Procedure in the Workplace</b>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitudes (KSA) required in applying occupational safety and health (OSH) procedures in the workplace. It specifically includes identifying OHS policies and procedures, following OSH procedure, reporting to emergencies, and maintaining personal well-being.
<b>Nominal Hours</b>	<b>15 Hours</b>
<b>Elements of Competency</b>	<b>Performance Criteria</b> <b>Bold &amp; Underlined</b> terms are elaborated in the Range of Variables
1. Identify OSH policies and procedures.	1.1. <b><u>OHS policies</u></b> and <b><u>safe operating procedures</u></b> are accessed and stated. 1.2. <b><u>Safety signs and symbols</u></b> are identified and followed. 1.3. Emergency response, evacuation procedures and other contingency measures are determined according to workplace requirements.
2. Follow OSH procedure	2.1 <b><u>Personal protective equipment (PPE)</u></b> is selected and collected as required. 2.2 Personal protective equipment (PPE) is correctly used in accordance with organization OHS procedures and practices. 2.3 A clear and tidy workplace is maintained as per workplace standard. 2.4 PPE is maintained to keep them operational and compliant with OHS regulations.
3. Report hazards and risks.	3.1 <b><u>Hazards</u></b> and risks are identified, assessed and controlled. 3.2 Incidents arising from hazards and risks are reported to designated authority.
4. Respond to emergencies	4.1 Alarms and warning devices are responded. 4.2 Workplace <b><u>emergency procedures</u></b> are followed. 4.3 <b><u>Contingency measures</u></b> during workplace accidents, fire and other emergencies are recognized and followed in accordance with organization procedures. 4.4 First aid procedures is applied during emergency situations.
5. Maintain personal well-being	5.1 OHS policies and procedures are adhered to. 5.2 OHS awareness programs are participated in as per workplace guidelines and procedures. 5.3 Corrective actions are implemented to correct unsafe condition in the workplace. 5.4 <b><u>“Fit to work” records</u></b> are updated and maintained according to workplace requirements.
<b>Range of Variables</b>	
<b>Variables</b>	<b>Range</b> (may include but not limited to):
1. OHS Policies	1.1. Bangladesh standards for OHS 1.2. Fire Safety Rules and Regulations 1.3. Code of Practice 1.4. Industry Guidelines

2. Safe Operating Procedures	2.1 Orientation on emergency exits, fire extinguishers, fire escape, etc. 2.2 Emergency procedures 2.3 First Aid procedures 2.4 Tagging procedures 2.5 Use of PPE 2.6 Safety procedures for hazardous substances
3. Safety Signs and symbols	3.1 Direction signs (exit, emergency exit, etc.) 3.2 First aid signs 3.3 Danger Tags 3.4 Hazard signs 3.5 Safety tags 3.6 Warning signs
4. Personal Protective Equipment (PPE)	4.1 Gas Mask 4.2 Gloves 4.3 Safety boots 4.4 Face mask 4.5 Overalls 4.6 Goggles and safety glasses 4.7 Sun block 4.8 Chemical/Gas detectors
5. Hazards	5.1 Chemical hazards 5.2 Biological hazards 5.3 Physical Hazards 5.4 Mechanical and Electrical Hazard 5.5 Mental hazard 5.6 Ergonomic hazard
6. Emergency Procedures	6.1 Fire fighting 6.2 Earthquake 6.3 Medical and first aid 6.4 evacuation`
7. Contingency measures	7.1 Evacuation 7.2 Isolation 7.3 Decontamination
8. "Fit to Work" records	8.1 Medical Certificate every year 8.2 Accident reports, if any 8.3 Eye vision certificate
<p><b>Evidence Guide</b> The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency</p>	
1. Critical aspects of competency	<p>Assessment required evidence that the candidate:</p> <p>1.1 stated OHS policies and safe operating procedures 1.2 followed safety signs and symbols 1.3 used personal protective equipment (PPE) 1.4 maintained workplace clear and tidy 1.5 assessed and Controlled hazards 1.6 followed emergency procedures 1.7 followed contingency measures 1.8 implemented corrective actions</p>

2. Underpinning knowledge	<ul style="list-style-type: none"> <li>2.1 Define OHS</li> <li>2.2 OHS Workplace Policies and Procedures</li> <li>2.3 Work Safety Procedures</li> <li>2.4 Emergency Procedures</li> <li>2.5 Hazard control procedure</li> <li>2.6 Different types of Hazards</li> <li>2.7 PPE and there uses</li> <li>2.8 Personal Hygiene Practices</li> <li>2.9 OHS Awareness</li> </ul>
3. Underpinning skills	<ul style="list-style-type: none"> <li>3.1 Accessing OHS policies</li> <li>3.2 Handling of PPE</li> <li>3.3 Handling cleaning tools and equipment</li> <li>3.4 Writing report</li> <li>3.5 Responding to emergency procedures</li> </ul>
4. Required attitude	<ul style="list-style-type: none"> <li>4.1 Commitment to occupational health and safety</li> <li>4.2 Sincere and honest to duties</li> <li>4.3 Promptness in carrying out activities</li> <li>4.4 Environmental concerns</li> <li>4.5 Eagerness to learn</li> <li>4.6 Tidiness and timeliness</li> <li>4.7 Respect of peers and seniors in workplace</li> <li>4.8 Communicate with peers and seniors in workplace</li> </ul>
5. Resource implications	<ul style="list-style-type: none"> <li>5.1 Workplace</li> <li>5.2 Equipment and outfits appropriate in applying safety measures</li> <li>5.3 Tools, materials and documentation required</li> <li>5.4 OHS Policies and Procedures</li> </ul>
6. Methods of assessment	<p>Competency should be assessed by:</p> <ul style="list-style-type: none"> <li>6.1 Written test</li> <li>6.2 Demonstration</li> <li>6.3 Oral Questioning</li> <li>6.4 Portfolio</li> </ul>
7. Context of assessment	<ul style="list-style-type: none"> <li>7.1 Competency assessment must be done in NSDA accredited assessment centre</li> <li>7.2 Assessment should be done by a NSDA certified/nominated assessor</li> </ul>
<p><b>Accreditation Requirements</b>  Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under National Skills Qualification (NSQF). Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p>	

<b>Unit code and Title</b>	<b>GU-03-L2-V1: Communicate in the Workplace</b>
<b>Unit Descriptor</b>	<p>This unit covers the knowledge, skills and attitudes (KSAs) required to communicate in the workplace.</p> <p>It includes the use of verbal and written forms of communication to receive, interpret, convey, and document information/ instruction using appropriate communication equipment.</p>
<b>Nominal Hours</b>	<b>30 Hours</b>
<b>Elements of Competency</b>	<b>Performance Criteria</b> <b><u>Bold &amp; Underlined</u></b> terms are elaborated in the Range of Variables Training Components
1. Receive verbal instructions.	<p>1.1 Instructions are accessed and interpreted</p> <p>1.2 Questions are asked to clarify understanding or gain more information.</p> <p>1.3 Information/instruction is recorded.</p>
2. Interpret verbal and written information/ instruction	<p>2.1 <b><u>Written instructions</u></b> are interpreted.</p> <p>2.2 Work <b><u>signage's</u></b> are properly responded.</p> <p>2.3 Routine written instructions are followed in sequence.</p> <p>2.4 Feedback is given to workplace supervisor.</p>
3. Convey instructions using verbal and written forms of communication	<p>3.1 Relevant <b><u>communication</u></b> methods are used to transmit instructions.</p> <p>3.2 Appropriate non-verbal communication is used.</p> <p>3.3 Channels of communication are identified and followed</p> <p>3.4 Communication <b><u>tools and equipment</u></b> are operated and faults are identified and reported.</p> <p>3.5 Information is conveyed using appropriate <b><u>forms</u></b>.</p>
4. Complete written documentation	<p>4.1 All required <b><u>documentation</u></b> is completed</p> <p>4.2 Workplace data are recorded</p> <p>4.3 Written information/instruction is passed to personnel.</p>
5. Participate in work place meetings and discussions	<p>5.1 Meetings are attended regularly and on time.</p> <p>5.2 Meeting inputs are consistent with the meeting purpose and established protocols.</p> <p>5.3 Opinions are expressed without interruption.</p> <p>5.4 Meeting outputs are processed and implemented.</p>
<b>Range of Variables</b>	
<b>Variable</b>	<b>Range</b> (may include but not limited to):
1. Written instructions	<p>1.1 Supervisor's/Manager's Instructions</p> <p>1.2 Memoranda</p> <p>1.3 Rules and Regulations</p> <p>1.4 Signage</p> <p>1.5 Approved Work Plan</p> <p>1.6 External communications</p>
2. Signage	<p>2.1 On-site direction signs</p> <p>2.2 Common site warnings</p> <p>2.3 Location signs</p> <p>2.4 Traffic signs</p>

3. Communication	3.1 Verbal instructions 3.2 Written instructions 3.3 Online communication
4. Tools and equipment	4.1 Telephone 4.2 Mobile Phone 4.3 Fax machines 4.4 Two-way radio 4.5 Computers 4.6 Forms 4.7 Memo 4.8 Two-way radio
5. Forms	5.1 Memorandum 5.2 Requisitioning Form 5.3 Personnel Form 5.4 Safety Report Form
6. Documentation	6.1 Reports (Monthly, Quarterly, Half-Yearly, Annual) 6.2 Plans (Strategic Plan, Operational Plan, Monthly Schedule) 6.3 Monitoring and Evaluation Report 6.4 Minutes of Meetings
<b>Evidence Guide</b> The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency	
1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 demonstrated knowledge of workplace procedures in receiving, interpreting and conveying verbal & written communication. 1.2 satisfied the requirements mentioned in the Performance Criteria and Range of Variables.
2. Underpinning Knowledge	2.1 Workplace Communication Policies, Standards and Procedures 2.2 Verbal and Non-verbal communication 2.3 Modes of Communication 2.4 Communication Equipment: Types, Uses and Faults 2.5 Channels of Communication
3. Underpinning Skills	3.1 Receiving verbal instructions. 3.2 Interpreting verbal and written information/ instruction 3.3 Conveying instructions using verbal and written forms of communication 3.4 Completing written documentation 3.5 Participating in workplace meetings and discussions
4. Underpinning Attitude	4.1 Commitment to occupational health and safety 4.2 Environmental concerns 4.3 Eagerness to learn 4.4 Tidiness and timeliness 4.5 Respect for rights of peers and seniors in workplace 4.6 Communication with peers and seniors in workplace
5. Resource Implications	The following resources must be provided: 5.1 Pens 5.2 Telephone 5.3 Computer 5.4 Writing materials 5.5 Online communication

6. Methods of Assessment	<p>Methods of assessment may include but not limited to:</p> <ul style="list-style-type: none"> <li>6.1 Workplace observation</li> <li>6.2 Demonstration</li> <li>6.3 Oral questioning</li> <li>6.4 Written test</li> <li>6.5 Portfolio</li> </ul>
7. Context of Assessment	<ul style="list-style-type: none"> <li>7.1 Competency assessment must be done in NSDA accredited assessment centre</li> <li>7.2 Assessment should be done by a NSDA certified/nominated assessor.</li> </ul>
<p><b>Accreditation Requirements</b></p> <p>Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under National Skills Qualification (NSQF). Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p>	

<b>Unit Code and Title</b>	<b>GU-03-L2-V1: Work in a Team Environment</b>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitudes (KSAs) required to work in a team environment. It includes defining team role and scope, identifying individual role and responsibility. Participating in team discussions and working as a team member.
<b>Nominal Hours</b>	<b>20 Hours</b>
<b>Elements of Competency</b>	<b>Performance Criteria</b> <b>Bold &amp; Underlined</b> terms are elaborated in the Range of Variables
1. Define team role and scope	1.1. Role and objectives of the team are defined. 1.2. Team structure, responsibilities and reporting relations are identified from team discussions and other external sources.
2. Identify individual role and responsibility	2.1 Individual roles and responsibilities of <b>team members</b> are identified. 2.2 Reporting relationships among team members are defined and clarified. 2.3 Reporting relationships external to the team are defined and clarified.
3. Participate in team discussions	3.1 Ideas related to team plans are contributed. 3.2 Recommendations for improving team work are put forward.
4. Work as a team member	4.1. Effective forms of communication are used to interact with team members. 4.2. Communication channels are followed. 4.3. OHS practices are followed.
<b>Range of Variables</b>	
<b>Variables</b>	<b>Range</b> (may include but not limited to):
2. Team Members	2.1 Coach/mentor 2.2 Supervisor/Manager 2.3 Peers/Colleagues 2.4 Employee representative
<b>Evidence Guide</b> The evidence must be authentic, valid, sufficient, reliable, consistent, recent and meet all requirements of current version of the Unit of Competency	
1. Critical aspects of competency	Assessment required evidence that the candidate: 1.1 demonstrated knowledge in working in a team environment. 1.2 satisfied the requirements mentioned in the Performance Criteria and Range of Variables
2. Underpinning knowledge	2.1 Team Structure, Role and Responsibility 2.2 Individual Members' Roles and Responsibilities 2.3 Communication Flow and Reporting Structures 2.4 Team Planning 2.5 Interpersonal Communication Skills 2.6 Team Meeting Procedures 2.7 OHS Practices



3. Underpinning skills	3.1 Identifying the role and responsibility of the team 3.2 Identifying roles and responsibilities of individual members 3.3 Participating in team discussions 3.4 Working as a team member
4. Underpinning Attitudes	4.1 Commitment to occupational health and safety 4.2 Environmental concerns 4.3 Eagerness to learn 4.4 Tidiness and timeliness 4.5 Respect for rights of peers and seniors in workplace 4.6 Communication with peers and seniors in Workplace
5. Resource implications	5.1 Pens 5.2 Telephone 5.3 Computer 5.4 Writing materials 5.5 Online communication
6. Methods of assessment	Methods of assessment may include but not limited to: 6.1. Workplace observation 6.2. Demonstration 6.3. Oral questioning 6.4. Written test 6.5. Portfolio
7. Context of assessment	7.1 Competency assessment must be done in NSDA accredited assessment center 7.2 Assessment should be done by a NSDA certified/nominated assessor
<p><b>Accreditation Requirements</b>  Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under National Skills Qualification (NSQF). Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p>	

## **Sector Specific Unit of Competencies**

<b>Unit Code and Title</b>	<b>SU-CON-01-L2-V1: Work in the Construction Sector</b>
<b>Unit Descriptor</b>	This unit covers the skills, knowledge and attitude required in working in the construction sector. It includes describe the organizational structure within the construction sector, identify processes and procedures, identify tools, equipment and materials, identify workplace practices, and organize own workload, and practice OHS.
<b>Nominal Hours</b>	<b>20 Hours</b>
<b>Elements of Competency</b>	<b>Performance Criteria</b> <b><u>Bold and Underlined</u></b> terms are elaborated in the Range of Variables.
1. Describe the organizational structure within the sector	1.1 Scope, nature and <b><u>major fields</u></b> of the construction sector are determined 1.2 The profile of the construction sector in relation to Bangladesh <b><u>employment conditions</u></b> is determined 1.3 Trends and technologies relevant to the sector are explained. 1.4 Relevant policies and guidelines are identified and interpreted. 1.5 <b><u>Instructions</u></b> as to procedures in achieving quality are obtained, understood and clarified.
2. Identify processes and procedures	2.1 Construction processes are identified, described and explained. 2.2 Work activities are correctly identified. 2.3 Adjustments are interpreted.
3. Identify workplace requirements	4.1 <b><u>Workplace requirements</u></b> are identified and clarified. 4.2 Roles and responsibilities of all personnel are described. 4.3 Workplace's practices are identified. 4.4 <b><u>Problem-solving strategies</u></b> are used to address bottlenecks, inconsistencies and other concerns.
4. Organize own workload	5.1 Own work activities are planned and progress of work is communicated to relevant staff. 5.2 Work activities are completed. 5.3 Difficulties and bottlenecks are identified, and solutions are put forwarded. 5.4 Own work is monitored against workplace standards and areas for improvement identified and acted upon.
<b>Range of Variables</b>	
<b>Variables</b>	<b>Range</b> (may include but not limited to):

1. Major Fields	1.1 Construction Site Support (Dogging, Rigging, etc.) 1.2 Carpentry and Form Works 1.3 Masonry, Brick/Block Laying and Concreting 1.4 Surface Finishing, Tiling and Painting 1.5 Roofing 1.6 Plumbing 1.7 Residential Electrical Wiring and Cabling
2. Employment conditions	2.1 Code of Practice 2.2 Salary/Wage System 2.3 Labor Practices 2.4 Anti-Discrimination Policy 2.5 Gender Issues 2.6 Collective Bargaining and Other Practices 2.7 Awards 2.8 Procedures for Handling Disputes 2.9 Innovations in the Sector
3. Instructions	3.1 Specifications and requirements 3.2 Standard operating procedures 3.3 Manuals of Instruction 3.4 Operations Manual 3.5 Environmental Guidelines 3.6 Gender and Develop Guidelines
4. Workplace requirements	4.1 Goals and objectives 4.2 Strategic and Operational Plans 4.3 Systems and Processes 4.4 Monitoring and Evaluation 4.5 Reports and Documentation
5. Problem-solving strategies	5.1 Asking questions 5.2 Feedback and Feed forward system 5.3 Reference to Standard Operating Procedures 5.4 Accessing Information 5.5 Reviews 5.6 Brainstorming
<b>Evidence Guide</b>	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidence that the candidate: 1.1 demonstrated knowledge in working in the Construction sector 1.2 satisfying all the requirements mentioned in the Performance Criteria and Range of Variables

2. Underpinning knowledge	2.1 Scope and Major Divisions of the Construction Sector 2.2 Relevant Policies and Guidelines in the Construction Sector 2.3 Manuals used in the Construction Sector 2.4 Relevant Terminologies and Acronyms 2.5 Workplace Practices 2.6 Recording and Reporting practices
3. Underpinning skills	3.1 Describing the organization structure 3.2 Identifying construction processes and procedures 3.3 Identifying tools, equipment and materials 3.4 Identifying workplace practices 3.5 Organizing own workload 3.6 Practicing OHS
4. Underpinning attitudes	4.1 Commitment to occupational health and safety 4.2 Environmental concerns 4.3 Eagerness to learn 4.4 Tidiness and timeliness 4.5 Respect for rights of peers and seniors in workplace
5. Resource implications	5.1 Pens 5.2 Telephone 5.3 Computer 5.4 Writing materials 5.5 Online communication
6. Methods of assessment	Competency should be assessed by 6.1 Workplace observation 6.2 Demonstration 6.3 Oral questioning 6.4 Written test 6.5 Portfolio
7. Context of assessment	7.1 Competency assessment must be done in NSDA accredited assessment centre 7.2 Assessment should be done by a NSDA certified/nominated assessor

### **Accreditation Requirements**

Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under National Skills Qualification (NSQF). Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.

<b>Unit Code and Title</b>	<b>SU-CON-02-L2-V1: Interpret Drawings and Specifications in Construction Manuals</b>
<b>Unit Descriptor</b>	This unit covers the knowledge, skill and attitude required in interpreting drawings and specifications in construction manuals. It includes identifying information from manuals, identifying drawings and specifications, interpreting drawings and specifications and storing manuals.
<b>Nominal Hours</b>	<b>20 Hours</b>
<b>Elements of Competency</b>	<b>Performance Criteria</b> <b><u>Bold and Underlined</u></b> terms are elaborated in the Range of Variables.
1. Identify information from manuals	1.1 Appropriate manuals are identified and accessed. 1.2 Version and date of the manual are checked to ensure up-to-date specifications of tools, equipment, materials and procedures.
2. Identify drawings and specifications	2.1 Relevant <b><u>drawings</u></b> and <b><u>specifications</u></b> are correctly identified. 2.2 Terms and abbreviations are identified. 2.3 Signs and symbols are identified
3. Interpret drawings and specifications	3.1 Drawings and specifications are interpreted. 3.2 Schedules, dimensions and specifications contained in the drawings are interpreted.
4. Store manuals	4.1. Documents are collected and packed. 4.2. Documents are stored to prevent damage, and ready access and updating of information when required.
<b>Range of Variables</b>	
<b>Variables</b>	<b>Range</b> (may include but not limited to):
1. Drawings	1.1 Technical Drawings 1.2 Sketch
2. Specifications	2.1 Product specifications 2.2 Performance specifications 2.3 Method specifications
<b>Evidence Guide</b> The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	

1. Critical aspects of competency	<p>Assessment required evidence that the candidate:</p> <p>1.1 interpret drawings and specifications in construction documents</p> <p>1.2 satisfying the requirements mentioned in the Performance Criteria and Range of Variables</p>
2. Underpinning knowledge	<p>2.1 Types of Construction Manuals</p> <p>2.2 Identification of Signs and Symbols</p> <p>2.3 Identification of Units of Measurement</p> <p>2.4 Identification of Units of Conversion</p> <p>2.5 Drawings and Specifications</p> <p>2.6 Terms and Abbreviations Used</p>
3. Underpinning skills	<p>3.1 Identifying appropriate manuals</p> <p>3.2 Identifying drawings and specifications</p> <p>3.3 Interpreting drawings and specifications</p> <p>3.4 Storing manuals</p>
4. Underpinning attitudes	<p>4.1 Commitment to occupational health and safety</p> <p>4.2 Environmental concerns</p> <p>4.3 Eagerness to learn</p> <p>4.4 Tidiness and timeliness</p> <p>4.5 Respect for rights of peers and seniors in workplace</p>
5. Resource implications	<p>5.1 Pens</p> <p>5.2 Telephone</p> <p>5.3 Computer</p> <p>5.4 Writing materials</p> <p>5.5 Online communication</p>
6. Methods of assessment	<p>Competency should be assessed by:</p> <p>6.1 Demonstration</p> <p>6.2 Oral questioning</p> <p>6.3 Written test</p> <p>6.4 Portfolio</p>
7. Context of assessment	<p>7.1 Competency assessment must be done in NSDA accredited assessment centre</p> <p>7.2 Assessment should be done by a NSDA certified/nominated assessor</p>

### **Accreditation Requirements**

Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under National Skills Qualification (NSQF). Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.





# **Occupation Specific Units of Competencies**

<b>Unit Code and Title</b>	<b>OU-CON-Plmb-01-L2-V1: Use Hand Tools and Power Tools</b>
<b>Unit Descriptor</b>	This unit covers the skills, knowledge and attitude required in using hand tools and power tools. It includes selecting tools, using hand tools, power tools, performing basic preventive maintenance and maintaining workplace cleanliness and storing tools.
<b>Nominal Hours</b>	<b>20 Hours</b>
<b>Elements of Competency</b>	<b>Performance Criteria</b> <b><u>Bold and Underlined</u></b> terms are elaborated in the Range of Variables.
1. Select tools	1.1 <b><u>Personal Protective Equipment (PPE)</u></b> is collected and worn as per requirement. 1.2 Appropriate <b><u>tools</u></b> are identified as per requirement. 1.3 <b><u>Applications</u></b> of tools are defined. 1.4 <b><u>Hand tools</u></b> and <b><u>power</u></b> tools are prepared for use. 1.5 Sources of power supply for power tools are identified.
2. Use hand tools	2.1 Appropriate tool is used. 2.2 Proper hand-eye coordination is applied in the use of hand tools. 2.3 Unsafe or faulty tools are identified and marked for repair
3. Use power tools	3.1 Route for power supply established in accordance with worker safety requirements. 3.2 Proper sequence of operations is determined in using power tools. 3.3 Power tools are used as required
4. Perform basic preventive maintenance.	4.1. Tools are cleaned as per standard procedure. 4.2. Appropriate lubricants are identified. 4.3. Tools are lubricated as required. 4.4. Defective tools are inspected and corrected or replaced as per standard procedure. 4.5. Tools are inspected, repaired and replaced after use.
5. Maintain workplace cleanliness and store tools	5.1 Workplace is cleaned as per standard procedure. 5.2 Hazardous materials are identified, separated and disposed as per workplace procedure. 5.3 Waste materials are disposed as per workplace procedure. 5.4 Inventory of tools are conducted, and recorded as per stock register by using forms. 5.5 Tools are cleaned and stored safely in appropriate location.
<b>Range of Variables</b>	

<b>Variables</b>	<b>Range (may include but not limited to):</b>
1. Personal Protective Equipment (PPE)	1.1. Dust mask 1.2. Safety glasses/Goggles 1.3. Gloves 1.4. Safety shoes/boots 1.5. Aprons 1.6. Face masks 1.7. Overalls 1.8. Helmet 1.9. Safety belt
2. Tools	2.1 Hand Tools 2.2 Power Tools
3. Applications	3.1 Adjusting 3.2 Aligning 3.3 Assembling 3.4 Boring 3.5 Clamping 3.6 Cleaning 3.7 Cutting 3.8 Dismantling 3.9 Finishing 3.10 Hand sharpening 3.11 Lubricating 3.12 Scraping 3.13 Simple Tool Repairs 3.14 Threading 3.15 Tightening
4. Hand tools	4.1 Adjustable wrench 4.2 Bars (crow and pitch) 4.3 Bench vise 4.4 Bolt cutters 4.5 Brace 4.6 C-clamp 4.7 Chisels 4.8 Crosscut saw 4.9 Die 4.10 Die stock 4.11 Files 4.12 Grin let 4.13 Hacksaw 4.14 Hammers 4.15 Hand drill machine 4.16 Hand saws 4.17 Measuring Tapes 4.18 Paint Brushes/Rollers 4.19 Picks/Mattocks

	4.20 Pliers 4.21 Plumb bob 4.22 Punches 4.23 Ripsaw 4.24 Scarpers 4.25 Screwdrivers 4.26 Sealant Gun 4.27 Shovel/Spades 4.28 Sledge Hammers 4.29 Sockets 4.30 Spanners and Wrenches 4.31 Spatula/Putty Knives 4.32 Steel tape 4.33 String Lines 4.34 Taps 4.35 Triangle 4.36 Trowels and Floats 4.37 Try square 4.38 Grip vice 4.39 Wire Cutters 3.16 Wooden planner
5. Power Tools	5.1 Hand drill machine 5.2 Angle Grinder 5.3 Circular cutting machine 5.4 Hand Grinder 5.5 Power saw 5.6 Portable pipe threading machine 5.7 Pedestal drill machine 5.8 Pedestal grinding machine
<b>Evidence Guide</b>	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidence that the candidate: 1.1 worn PPE 1.2 used hand tools and power tools safely 1.3 determined proper sequence of operations in using power tools. 1.4 inspected, separated and corrected of defective tools. 1.5 lubricated tools 1.6 cleaned Workplace and store tools
2. Underpinning knowledge	2.1 Hand tools for plumbing works 2.2 Power tools for plumbing works 2.3 Technical Application of hand & power tools 2.4 Procedures using of Hand Tools and Power Tools 2.5 Preventive Maintenance 2.6 Corrective maintenance

	2.7 Storage Procedures
3. Underpinning skills	3.1 Applying skills in practice OSH 3.2 Collecting of appropriate Tools 3.3 Applying appropriate procedure 3.4 Using Hand Tools safely 3.5 Using Power Tools safely 3.6 Performing Preventive Maintenance 3.7 Communicating skills in the workplace
4. Underpinning attitudes	4.1 Commitment to occupational health and safety 4.2 Environmental concerns 4.3 Eagerness to learn 4.4 Tidiness and timeliness 4.5 Respect for rights of peers and seniors in workplace
5. Resource implications	5.1 Adequate workplaces 5.2 Materials for plumbing work 5.3 Hand tools and power tools appropriate to plumbing work 5.4 Information and documentation 5.5 Product specifications 5.6 Manual, Codes, Standards and reference materials
6. Methods of assessment	Competency should be assessed by: 6.1 Workplace observation 6.2 Demonstration 6.3 Oral questioning 6.4 Written test 6.5 Portfolio
7. Context of assessment	7.1 Competency assessment must be done in NSDA accredited assessment centre 7.2 Assessment should be done by a NSDA certified/nominated assessor
<p><b>Accreditation Requirements</b></p> <p>Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under National Skills Qualification (NSQF). Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p>	

<b>Unit Code and Title</b>	<b>OU-CON-Plmb-02-L2-V1: Fabricate and Prepare Pipes for Installation</b>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitude required to fabricate and prepare pipes for installation. It includes practicing OSH, collecting tools, equipment and materials, cutting pipes, threading pipes and maintaining workplace cleanliness and store tools.
<b>Nominal Hours</b>	<b>25 Hours</b>
<b>Elements of Competency</b>	<b>Performance Criteria</b> <b><u>Bold and Underlined</u></b> terms are elaborated in the Range of Variables.
1. Practice OSH	1.1. <b><u>PPE</u></b> is collected and worn as per requirement. 1.2. Workplace safety and health procedure is maintained as per workplace standard.
2. Collect tools, equipment and materials	2.1 <b><u>Tools and equipment</u></b> are selected and collected. 2.2 <b><u>Size of pipes</u></b> is chosen as per requirements. 2.3 <b><u>Pipes</u></b> are selected and collected as required.
3. Cut pipes	3.1 Pipes are measured and marked as per requirement. 3.2 Pipes are hold and clamped with vice. 3.3 Pipes are <b><u>cut</u></b> as per following standard procedure. 3.4 Cutting edge is cleaned as per standard procedure.
4. Cut threads	4.1 Pipes are hold and clamped with pipe vice. 4.2 Die-stocks are adjusted as required. 4.3 Thread cutting is performed as per standard procedure. 4.4 Cutting oils are used during operation as required. 4.5 Pipe ends and thread is cleaned as per standard procedure. 4.6 Thread is checked and adjusted as required.
5. Maintain workplace cleanliness and store tools	5.1 Workplace is cleaned as per standard procedure. 5.2 Hazardous materials are identified, separated and disposed as per workplace procedure. 5.3 Waste materials are disposed as per workplace procedure. 5.4 Tools are cleaned and stored safely in appropriate location.
<b>Range of Variables</b>	
<b>Variables</b>	<b>Range</b> (may include but not limited to):
1. PPE	1.1. Dust mask. 1.2. Safety Goggles. 1.3. Safety shoes. 1.4. Apron. 1.5. Hand Gloves.
2. Tools and Equipment	2.1 Measuring tape. 2.2 Hacksaw. 2.3 Flat file. 2.4 Adjustable wrench.

	2.5 Ball pein Hammer. 2.6 Chain tongs 2.7 Pipe wrench 2.8 Claw hammer 2.9 Mallet 2.10 Thread gauge 2.11 Pipe cutter 2.12 Ratchet die stock 2.13 Pipe die set 2.14 Ratchet hand pipe threader
3. Size of pipes	3.1 12 mm dia. 3.2 16 mm dia. 3.3 25 mm dia. 3.4 32 mm dia. 3.5 40 mm dia. 3.6 50 mm dia. 3.7 62 mm dia. 3.8 75 mm dia. 3.9 100 mm dia.
4. Pipes	4.1 G.I. Pipe. 4.2 PVC pipe 4.3 uPVC pipe. 4.4 uPVC thread pipe. 4.5 PPR pipe 4.6 CPVC pipe
5. Cut	5.1 Cut by Hack saw 5.2 Cut by pipe cutter
<b>Evidence Guide</b> The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidences that the candidate: 1.1 collected and worn PPE 1.2 selected pipe sizes. 1.3 cut pipes. 1.4 threaded Pipes. 1.5 selected and collected Tools and equipment.
2. Underpinning knowledge	2.1 Tools Equipment & Materials for plumbing work. 2.2 Measurement and calculation. 2.3 Pipe cutting method. 2.4 Types of thread. 2.5 Nomenclature of thread 2.6 Lubricating 2.7 Thread measurement

	<ul style="list-style-type: none"> <li>2.8 Pipes and tubes</li> <li>2.9 Types of pipes</li> </ul>
3. Underpinning Skills	<ul style="list-style-type: none"> <li>3.1 Preparing Tools Equipment &amp; materials.</li> <li>3.2 Planning for work activities</li> <li>3.3 Using of plumbing tools and equipment.</li> <li>3.4 Measuring length and dimension</li> </ul>
4. Underpinning attitudes	<ul style="list-style-type: none"> <li>4.1 Commitment to occupational health and safety</li> <li>4.2 Environmental concerns</li> <li>4.3 Eagerness to learn</li> <li>4.4 Tidiness and timeliness</li> <li>4.5 Respect for rights of peers and seniors in workplace</li> </ul>
5. Resource implications	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>5.1 Adequate Workplace.</li> <li>5.2 Tools and equipment.</li> <li>5.3 Materials relevant to perform activity.</li> <li>5.4 Drawing and specifications relevant to the task.</li> </ul>
6. Methods of assessment	<p>Competency should be assessed by:</p> <ul style="list-style-type: none"> <li>6.1 Demonstration</li> <li>6.2 Oral questioning</li> <li>6.3 Written test</li> <li>6.4 Portfolio</li> </ul>
7. Context of assessment	<ul style="list-style-type: none"> <li>7.1 Competency assessment must be done in NSDA accredited assessment centre</li> <li>7.2 Assessment should be done by a NSDA certified/nominated assessor</li> </ul>
<p><b>Accreditation Requirements</b></p> <p>Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under National Skills Qualification (NSQF). Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p>	



<b>Unit Code and Title</b>	<b>OU-CON-Plmb-03-L2-V1: Make Pipe Joints</b>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitude required to make pipe joints. It includes practicing OSH, collecting tools, equipment, making joints with fittings, and maintaining workplace cleanliness and storing tools.
<b>Nominal Hours</b>	<b>25 Hours</b>
<b>Elements of Competency</b>	<b>Performance Criteria</b> <b><u>Bold and Underlined</u></b> terms are elaborated in the Range of Variables.
1. Practice OSH	1.1. <b><u>Personal protective equipment (PPE)</u></b> is collected and worn as per requirement. 1.2. Workplace safety and health procedure is maintained as per workplace standard.
2. Collect tools, equipment and materials	2.1 <b><u>Tools and equipment</u></b> are selected and collected as required. 2.2 <b><u>Materials and consumables</u></b> are selected and collected as per requirement. 2.3 <b><u>Pipes</u></b> are selected and collected as required.
3. Make joints with fittings	3.1 Pipes are laid down with a standard slope for joining fittings. 3.2 Pipe ends are cleaned prior to fit-up as required. 3.3 Measurements are taken as per requirements. 3.4 <b><u>Pipe joints</u></b> are selected as per requirement. 3.5 Pipes are joined with fittings as per standard procedure. 3.6 Joints are checked and defects are rectified as required. 3.7 Leak test is performed following standard procedure.
4. Maintain workplace cleanliness and store tools	4.1 Workplace is cleaned as per standard procedure. 4.2 Hazardous materials are identified, separated and disposed as per workplace procedure. 4.3 Waste materials are disposed as per workplace procedure. 4.4 Tools are cleaned and stored safely in appropriate location.
<b>Range of Variables</b>	
<b>Variables</b>	<b>Range</b> (may include but not limited to):
1. Personal protective equipment (PPE)	1.1. Dust mask 1.2. Goggles 1.3. Safety shoes 1.4. Apron 1.5. Gloves

	1.6. Helmet 1.7. Ear plug 1.8. Safety Belt
2. Tools and equipment	2.1 Pipe Cutter/hack saw with blade 2.2 Ball pein Hammer 2.3 Pipe wrench 2.4 Adjustable wrench 2.5 Pipe vice 2.6 Die stock with die set
3. Materials and consumables	3.1 Thread tape/Sealing tape 3.2 Adhesive solution 3.3 Waste cotton 3.4 Solvent cement 3.5 Pipe fittings as per joint
4. Pipes	4.1 GI 4.2 PVC 4.3 uPVC 4.4 uPVC thread pipe 4.5 PPR 4.6 CPVC
5. Pipe joints	5.1 Y-joint 5.2 Cross 5.3 Tee 5.4 Elbow 5.5 Bend 5.6 Socket
<b>Evidence Guide</b> The evidence must be authentic, valid, sufficient, reliable and consistent to meet the requirements of the current version of the unit of competency.	
1. Critical Aspects	Competency assessment requires evidence that the candidate: 1.1 selected materials in accordance with specification and requirement. 1.2 making joint & fittings. 1.3 checked joints and rectified defects as required. 1.4 performed leak proof test
2. Underpinning knowledge	2.1. Measurements (linear and angular) 2.2. Pipe fittings. 2.3. Different types of joints. 2.4. Economic use of materials. 2.5. Leak proof Joints.
3. Underpinning skills	3.1. Interpreting drawing and specification. 3.2. Preparing materials. 3.3. Handling hand tools and power tools.

	3.4. Planning for own work.
4. Underpinning attitudes	4.1. Commitment to occupational health and safety 4.2. Environmental concerns 4.3. Eagerness to learn 4.4. Tidiness and timeliness 4.5. Respect for rights of peers and seniors in workplace
5. Resource implications	The following resources must be provided: 5.1. Adequate Workplace 5.2. Tools and equipment required for work activities 5.3. Materials relevant to work activity 5.4. Drawing and specifications relevant to the task.
6. Methods of assessment	Competency should be assessed by: 6.1. Workplace observation 6.2. Demonstration 6.3. Oral questioning 6.4. Written test 6.5. Portfolio
7. Context of assessment	7.1. Competency assessment must be done in NSDA accredited assessment centre 7.2. Assessment should be done by a NSDA certified/nominated assessor
<p><b>Accreditation Requirements</b></p> <p>Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under National Skills Qualification (NSQF). Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p>	

<b>Unit Code and Title</b>	<b>OU-CON-Plmb-04-L2-V1: Perform Cutting and Penetration for plumbing works</b>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitudes required to Perform Cutting and Penetration for plumbing works. It includes practicing OSH, cutting wall and floor, laying out the pipes and maintaining workplace cleanliness and storing tools & equipment.
<b>Nominal Hours</b>	<b>45 Hours</b>
<b>Elements of Competency</b>	<b>Performance Criteria</b> <b><u>Bold and Underlined</u></b> terms are elaborated in the Range of Variables.
1. Practice OSH	1.1. <b><u>Personal protective equipment (PPE)</u></b> is collected and worn as per requirement. 1.2. Workplace safety and health procedure is maintained as per workplace standard.
2. Cut wall and floor	2.1 <b><u>Tools and equipment</u></b> are collected as required. 2.2 Work instruction is interpreted as per requirement. 2.3 <b><u>Pipes</u></b> Lay-out diagram in wall or floor are performed as required. 2.4 Cutting walls are made without causing damage to floors/walls and adjacent installations. 2.5 Faults are identified and rectified as required
3. Lay-out pipe	3.1. Work instructions are read and interpreted. 3.2. <b><u>Materials</u></b> are collected as per requirements. 3.3. Layouts of pipes are made as per instruction. 3.4. Work dimension and alignment of work are done as required. 3.5. Faults of layout are checked and rectified as required. 3.6. Cut walls and floor surface is refilled as required.
4. Maintain workplace cleanliness and store tools	4.1. Workplace is cleaned as per standard procedure. 4.2. Hazardous materials are identified, separated and disposed as per workplace procedure. 4.3. Waste materials are disposed as per workplace procedure. 4.4. Tools are cleaned and stored safely in appropriate location.
<b>Range of Variables</b>	
<b>Variable</b>	<b>Range</b> (may include but not limited to):
1. Personal protective equipment (PPE)	1.1. Gloves 1.2. Helmet 1.3. Safety shoes 1.4. Goggles 1.5. Ear plug 1.6. Safety belt with accessories
2. Tools and equipment	2.1 Ball pein hammer 2.2 Claw hammer 2.3 Cross pein hammer 2.4 Cold chisel

	<ul style="list-style-type: none"> <li>2.5 Hand Drill machine</li> <li>2.6 Hacksaw</li> <li>2.7 Trolley</li> <li>2.8 Spirit level</li> <li>2.9 Shovel</li> <li>2.10 Trowel</li> <li>2.11 Steel tape</li> <li>2.12 Concrete cutter</li> <li>2.13 Try square</li> </ul>
3. Pipes	<ul style="list-style-type: none"> <li>3.1. GI</li> <li>3.2. PVC</li> <li>3.3. uPVC</li> <li>3.4. uPVC thread pipe</li> <li>3.5. PPR</li> <li>3.6. CPVC</li> </ul>
4. Materials	<ul style="list-style-type: none"> <li>4.1 Cement</li> <li>4.2 Sand</li> <li>4.3 Bricks</li> <li>4.4 Nails</li> <li>4.5 Brick/stone chips</li> </ul>
<p><b>Evidence Guide</b></p> <p>The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.</p>	
1. Critical aspects of competency	<p>Assessment required evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1. worn PPE.</li> <li>1.2. read and interpreted work instructions according to requirements.</li> <li>1.3. performed pipe layout.</li> <li>1.4. cut walls and floors according to lay-out.</li> <li>1.5. demonstrated compliance with safety regulations applicable to work site operations.</li> <li>1.6. Identified faults and rectified as required.</li> </ul>
2. Underpinning Knowledge	<ul style="list-style-type: none"> <li>2.1. Layout</li> <li>2.2. Cutting procedure</li> <li>2.3. Plumbing symbols</li> <li>2.4. Safety precautions in cutting walls &amp; floors</li> <li>2.5. Filling procedure</li> </ul>
3. Underpinning Skills	<ul style="list-style-type: none"> <li>3.1. Interpreting drawing and instruction.</li> <li>3.2. Preparing materials.</li> <li>3.3. Performing basic masonry and cement concrete works.</li> <li>3.4. Handling hand tools and power tools.</li> </ul>
4. Underpinning attitudes	<ul style="list-style-type: none"> <li>4.1. Commitment to occupational health and safety</li> <li>4.2. Environmental concerns</li> <li>4.3. Eagerness to learn</li> </ul>

	<p>4.4. Tidiness and timeliness</p> <p>4.5. Respect for rights of peers and seniors in workplace Respect for rights of peers and seniors in workplace.</p>
5. Resource implications	<p>The following resources must be provided:</p> <p>5.1. Adequate Workplace</p> <p>5.2. Tools and equipment required for work activities</p> <p>5.3. Materials relevant to work activity</p> <p>5.4. Drawing and specifications relevant to the task.</p>
6. Methods of assessment	<p>Competency should be assessed by:</p> <p>6.1. Demonstration</p> <p>6.2. Oral questioning</p> <p>6.3. Written test</p> <p>6.4. Portfolio</p>
7. Context of assessment	<p>7.1. Competency assessment must be done in NSDA accredited assessment centre</p> <p>7.2. Assessment should be done by a NSDA certified/nominated assessor</p>
<p><b>Accreditation Requirements</b></p> <p>Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under National Skills Qualification (NSQF). Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p>	

<b>Unit Code and Title</b>	<b>OU-CON-Plmb-05-L2-V1: Install Water Supply and Waste Water Pipeline</b>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitudes required to Install water supply and waste water pipeline. It includes practicing OSH, collecting tools, equipment and materials, cutting thread, fixing joints and fittings for pipe, installing pipes and maintaining workplace cleanliness and store tools.
<b>Nominal Hours</b>	<b>30 Hours</b>
<b>Elements of Competency</b>	<b>Performance Criteria</b> <b><u>Bold and Underlined</u></b> terms are elaborated in the Range of Variables.
1. Collect tools, equipment and materials	1.1 <b><u>Personal protective equipment (PPE)</u></b> is collected and worn as per requirement. 1.2 Workplace safety and health procedure is maintained as per workplace standard. 1.3 <b><u>Tools and equipment</u></b> are selected and collected. 1.4 <b><u>Size of pipes</u></b> is selected as per requirements. 1.5 <b><u>Pipes</u></b> are selected and collected as required. 1.6 <b><u>Fittings</u></b> are selected and Collected as required.
2. Cut threads	2.1. Pipes are hold and clamped with pipe vice. 2.2. Die-stocks are adjusted as required. 2.3. Thread cutting is performed as per standard procedure. 2.4. Cutting oils are used during operation. 2.5. Pipe ends and thread is cleaned as per standard procedure. 2.6. Thread is checked and adjusted as required.
3. Make joints with fittings	3.1 Pipes are laid down with a standard slope for joining fittings. 3.2 Pipe ends are cleaned prior to fit-up. 3.3 Measurements are taken as per requirements. 3.4 Pipe <b><u>joints</u></b> are selected as required. 3.5 Pipes are joined with fittings as per standard procedure. 3.6 Pipes are joined with the <b><u>fixtures</u></b> 3.7 Leak test is performed following standard procedure.
4. Install pipes	4.1 Pipes are installed with a standard slope. 4.2 Pipes are joined as required. 4.3 Pipes are joined with fittings & fixtures.
5. Maintain workplace cleanliness and store tools	5.1 Workplace is cleaned as per standard procedure. 5.2 Hazardous materials are identified, separated and disposed as per workplace procedure. 5.3 Waste materials are disposed as per workplace procedure. 5.4 Tools are cleaned and stored safely in appropriate location.
<b>Range of Variables</b>	
<b>Variable</b>	<b>Range</b> (may include but not limited to):
1. Personal protective equipment (PPE)	1.1. Gloves 1.2. Helmet 1.3. Safety shoes 1.4. Goggles 1.5. Ear plug 1.6. Hand gloves 1.7. Safety belt

2. Tools and equipment	2.1 Ball pein hammer 2.2 Cold chisel 2.3 Saw 2.4 Drill machine 2.5 Hacksaw 2.6 Pushcart 2.7 Spirit level 2.8 Shovel 2.9 Pointing trowel 2.10 Push pull rule 2.11 Concrete cutter
3. Sizes of pipe	3.1. 12 mm dia. 3.2. 16 mm dia. 3.3. 25 mm dia. 3.4. 32 mm dia. 3.5. 40 mm dia. 3.6. 50 mm dia.
4. Pipes	4.1 Plain pipe 4.2 Threaded pipe
5. Fittings	5.1 Socket 5.2 Elbow 5.3 Union 5.4 Reducer 5.5 Tee 5.6 Bend 5.7 Running nipple
6. Joints	6.1. Y-joint 6.2. Cross 6.3. Tee 6.4. Elbow 6.5. Bend 6.6. Socket
7. Fixtures	7.1 Basin 7.2 Sink 7.3 Shower
<b>Evidence Guide</b>	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment required evidence that the candidate: 1.1. selected pipes in accordance with specifications and requirements. 1.2. performed thread cutting as per standard procedure 1.3. checked thread is and adjusted as required. 1.4. laid down pipes with a standard slope for joining fittings 1.5. taken measurements are as per requirements 1.6. performed leak test following standard procedure 1.7. installed pipes with a standard slope 1.8. joined pipes with fittings & fixtures. 1.9. cleaned workplace as per standard procedure
2. Underpinning Knowledge	2.1. Measurements (linear and angular) 2.2. Fixture 2.3. Pipe. 2.4. Water supply line



	<ul style="list-style-type: none"> <li>2.5. Waste water pipe line</li> <li>2.6. Standard slop</li> </ul>
3. Underpinning Skills	<ul style="list-style-type: none"> <li>3.1. Interpreting plan and details.</li> <li>3.2. Preparing materials.</li> <li>3.3. Performing basic masonry and cement concrete works.</li> <li>3.4. Planning for own work activities.</li> </ul>
4. Underpinning attitudes	<ul style="list-style-type: none"> <li>4.1. Commitment to occupational health and safety</li> <li>4.2. Environmental concerns</li> <li>4.3. Eagerness to learn</li> <li>4.4. Tidiness and timeliness</li> <li>4.5. Respect for rights of peers and seniors in workplace Respect for rights of peers and seniors in workplace.</li> </ul>
5. Resource implications	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>5.1. Adequate Workplace</li> <li>5.2. Tools and equipment required for work activities</li> <li>5.3. Materials relevant to work activity</li> <li>5.4. Drawing and specifications relevant to the task.</li> </ul>
6. Methods of assessment	<p>Competency should be assessed by:</p> <ul style="list-style-type: none"> <li>6.1. Demonstration</li> <li>6.2. Oral Questioning</li> <li>6.3. Written test</li> <li>6.4. Portfolio</li> </ul>
7. Context of assessment	<ul style="list-style-type: none"> <li>7.1. Competency assessment must be done in NSDA accredited assessment centre</li> <li>7.2. Assessment should be done by a NSDA certified/nominated assessor</li> </ul>
<p><b>Accreditation Requirements</b></p> <p>Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under National Skills Qualification (NSQF). Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p>	

<b>Unit Code and Title</b>	<b>OU-CON-Plmb-06-L2-V1: Install Plumbing Fixtures</b>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitudes required to install plumbing fixtures. It includes Practicing OSH, collecting tools, equipment and materials, installing fixtures and maintaining workplace cleanliness and store tools.
<b>Nominal Hours</b>	<b>85 Hours</b>
<b>Elements of Competency</b>	<b>Performance Criteria</b> <b><u>Bold and Underlined</u></b> terms are elaborated in the Range of Variables.
1. Practice OSH	1.1 <b><u>Personal protective equipment (PPE)</u></b> is collected and worn as per requirement. 1.2 Workplace safety and health procedure is maintained as per workplace standard.
2. Collect tools, equipment and materials	2.1 <b><u>Tools and equipment</u></b> are selected and collected as per requirements. 2.2 <b><u>Size of pipes</u></b> is selected as required. 2.3 <b><u>Pipes</u></b> are selected and collected as required. 2.4 <b><u>Materials</u></b> and <b><u>accessories</u></b> are collected as per specification.
3. Install fixtures	3.1 <b><u>Fixtures</u></b> are collected as per requirements. 3.2 Fixtures are checked as per specification. 3.3 Location of fixtures are identified. 3.4 Accessories are connected with fixtures as per standard procedure. 3.5 Fixtures are installed as per workplace standard. 3.6 Fixtures are checked for functionality and faults are corrected as required.
4. Maintain workplace cleanliness and store tools	4.1 Workplace is cleaned as per standard procedure. 4.2 Hazardous materials are identified, separated and disposed as per workplace procedure. 4.3 Waste materials are disposed as per workplace procedure. 4.4 Tools are cleaned and stored safely in appropriate location.
<b>Range of Variables</b>	
<b>Variable</b>	<b>Range</b> (may include but not limited to):
1. Personal protective equipment (PPE)	1.1. Gloves 1.2. Helmet 1.3. Safety shoes 1.4. Goggles 1.5. Ear plug
2. Tools and equipment	2.1 Ball pein hammer 2.2 Cold chisel 2.3 Hand drill machine

	<ul style="list-style-type: none"> <li>2.4 Hacksaw</li> <li>2.5 Trolley</li> <li>2.6 Spirit level</li> <li>2.7 Shovel</li> <li>2.8 Trowel</li> <li>2.9 Steel tape</li> <li>2.10 Try square</li> </ul>
3. Sizes of pipe	<ul style="list-style-type: none"> <li>3.1. 12 mm dia.</li> <li>3.2. 16 mm dia.</li> <li>3.3. 25 mm dia.</li> <li>3.4. 32 mm dia.</li> <li>3.5. 40 mm dia.</li> <li>3.6. 50 mm dia.</li> </ul>
4. Pipes	<ul style="list-style-type: none"> <li>4.1. Plain pipe</li> <li>4.2. Threaded pipe</li> </ul>
5. Materials	<ul style="list-style-type: none"> <li>5.1 Marker</li> <li>5.2 Cement</li> <li>5.3 Sand</li> <li>5.4 Bricks</li> <li>5.5 Brick/stone chips</li> <li>5.6 Thread tape</li> <li>5.7 Solvent cement</li> <li>5.8 Waste cotton</li> </ul>
6. Accessories	<ul style="list-style-type: none"> <li>6.1 Faucets (kitchen and bathroom)</li> <li>6.2 Soap case</li> <li>6.3 Mirror</li> <li>6.4 Towel rail</li> <li>6.5 Glass self</li> <li>6.6 Tissue holder</li> <li>6.7 Magic pipe</li> <li>6.8 Connection pipe</li> <li>6.9 Gratings cover</li> </ul>
7. Fixtures	<ul style="list-style-type: none"> <li>7.1 Wash basin</li> <li>7.2 Sink</li> <li>7.3 Commode</li> <li>7.4 Toilet pan</li> <li>7.5 Shower</li> </ul>
<p><b>Evidence Guide</b>  The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.</p>	
1. Critical aspects of competency	<p>Assessment required evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1. selected materials in accordance with specifications and requirements.</li> <li>1.2. installed fixtures.</li> <li>1.3. connected accessories with fixtures.</li> </ul>

	1.4. checked fixtures for functionality and faults. 1.5. identified faults and rectified.
2. Underpinning Knowledge	2.1. Fixtures and their uses. 2.2. Faucets 2.3. Fixture accessories 2.4. Waste materials disposal
3. Underpinning Skills	3.1. Preparing materials. 3.2. Handling tools and equipment 3.3. Performing basic masonry and cement concrete works. 3.4. Planning own work activities. 3.5. Checking leakage.
4. Underpinning attitudes	4.1. Commitment to occupational health and safety 4.2. Environmental concerns 4.3. Eagerness to learn 4.4. Tidiness and timeliness 4.5. Respect for rights of peers and seniors in workplace Respect for rights of peers and seniors in workplace.
5. Resource implications	The following resources must be provided: 5.1. Adequate Workplace 5.2. Tools and equipment required for work activities 5.3. Materials relevant to work activity 5.4. Drawing and specifications relevant to the task.
6. Methods of assessment	Competency should be assessed by: 6.1. Demonstration 6.2. Oral questioning 6.3. Written test 6.4. Portfolio
7. Context of assessment	7.1. Competency assessment must be done in NSDA accredited assessment centre 7.2. Assessment should be done by a NSDA certified/nominated assessor
<p><b>Accreditation Requirements</b></p> <p>Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under National Skills Qualification (NSQF). Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p>	

<b>Unit Code and Title</b>	<b>OU-CON-Plmb-07-L2-V1: Maintain and Service Plumbing Works</b>
<b>Unit Descriptor</b>	<p>This unit covers the knowledge, skills and attitudes required to maintain and service plumbing works.</p> <p>It includes practicing OSH, selecting and collecting tools, equipment and materials, maintaining and service of pipe fittings and fixtures, clearing clogged pipes and drains and maintaining workplace cleanliness and storing tools.</p>
<b>Nominal Hours</b>	<b>25 Hours</b>
<b>Elements of Competency</b>	<b>Performance Criteria</b> <b><u>Bold and Underlined</u></b> terms are elaborated in the Range of Variables.
1. Practice OSH	<p>1.1 <b><u>Personal protective equipment (PPE)</u></b> is collected and worn as per requirement.</p> <p>1.2 Workplace safety and health procedure is maintained as per workplace standard.</p>
2. Select and collect tools, equipment and materials	<p>2.1 <b><u>Maintenance and service</u></b> requirements are identified as per job requirement.</p> <p>2.2 <b><u>Tools, equipment</u></b> and <b><u>materials</u></b> are selected and collected.</p>
3. Maintain and service of pipe fittings and fixtures	<p>3.1 Defective <b><u>pipes, fittings</u></b> and fixtures are identified, disconnected and serviced as required.</p> <p>3.2 Defective pipes, fittings and fixtures are replaced as per requirements.</p> <p>3.3 Replacements are checked for functionality.</p> <p>3.4 Joints are secured and leak proofing is performed.</p> <p>3.5 Damaged areas are repaired as required.</p> <p>3.6 Correct function of fittings and fixtures are observed.</p>
4. Clear clogged pipes and drains	<p>4.1 Clogged pipes and drains are fixed in line.</p> <p>4.2 Water supply is shutoff as per standard procedure.</p> <p>4.3 Clogged pipes and drains are cleared as required.</p> <p>4.4 Water supply line is opened as per standard procedure.</p> <p>4.5 Continuity of water supply is checked and faults are rectified following the above steps.</p>
5. Maintain workplace cleanliness and store tools	<p>5.1 Workplace is cleaned as per standard procedure.</p> <p>5.2 Hazardous materials are identified, separated and disposed as per workplace procedure.</p> <p>5.3 Waste materials are disposed as per workplace procedure.</p> <p>5.4 Tools are cleaned and stored safely in appropriate location.</p>
<b>Range of Variables</b>	
<b>Variable</b>	<b>Range</b> (may include but not limited to):
1. Personal protective equipment (PPE)	<p>1.1. Gloves</p> <p>1.2. Helmet</p> <p>1.3. Safety shoes</p> <p>1.4. Goggles</p> <p>1.5. Ear plug</p> <p>1.6. Safety belt</p>

2. Maintenance and service	<ul style="list-style-type: none"> <li>2.1 Valves</li> <li>2.2 Pipe joints</li> <li>2.3 Accessories</li> <li>2.4 Basin</li> <li>2.5 Sink</li> <li>2.6 Shower</li> <li>2.7 Faucets</li> </ul>
3. Tools and equipment	<ul style="list-style-type: none"> <li>3.1 Ball pein Hammer</li> <li>3.2 Cold chisel</li> <li>3.3 Claw hammer</li> <li>3.4 Hand drill machine</li> <li>3.5 Hacksaw</li> <li>3.6 Pushcart</li> <li>3.7 Spirit level</li> <li>3.8 Shovel</li> <li>3.9 Pointing trowel</li> <li>3.10 Push pull rule</li> <li>3.11 Concrete cutter</li> <li>3.12 Cold chisel</li> <li>3.13 Trowel</li> </ul>
4. Materials	<ul style="list-style-type: none"> <li>4.1 Cement</li> <li>4.2 Sand</li> <li>4.3 Bricks</li> <li>4.4 Brick/stone chips</li> </ul>
5. Pipes	<ul style="list-style-type: none"> <li>5.1. Plain pipe</li> <li>5.2. Threaded pipe</li> </ul>
6. Fittings	<ul style="list-style-type: none"> <li>6.1. Socket</li> <li>6.2. Elbow</li> <li>6.3. Union</li> <li>6.4. Reducer</li> <li>6.5. Tee</li> <li>6.6. Bend</li> <li>6.7. Running nipple</li> </ul>
<p><b>Evidence Guide</b>  The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.</p>	
1. Critical aspects of competency	<p>Assessment required evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1. collected and worn PPE.</li> <li>1.2. identified maintenance and service requirements are as per job requirement.</li> <li>1.3. Identified, disconnected and serviced defective pipes, fittings and fixtures.</li> <li>1.4. secured joints and performed leak proofing</li> <li>1.5. fixed clogged pipes and drains in line</li> <li>1.6. cleared clogged pipes and drains</li> <li>1.7. cleaned workplace is as per standard procedure</li> </ul>
2. Underpinning Knowledge	<ul style="list-style-type: none"> <li>2.1. Maintenance</li> <li>2.2. Servicing</li> <li>2.3. Common faults in basin, sink, shower, commode, toilet pan</li> <li>2.4. Probable solution of faults</li> <li>2.5. Causes of water leakage</li> <li>2.6. Water clogging</li> <li>2.7. Clogging solving procedure</li> </ul>

	<ul style="list-style-type: none"> <li>2.8. Causes of faults in faucets</li> <li>2.9. Extraction procedure of broken fittings</li> </ul>
3. Underpinning Skills	<ul style="list-style-type: none"> <li>3.1. Preparing materials.</li> <li>3.2. Handling tools and equipment</li> <li>3.3. Performing basic masonry and cement concrete works.</li> <li>3.4. Planning for own works.</li> </ul>
4. Underpinning attitudes	<ul style="list-style-type: none"> <li>4.1. Commitment to occupational health and safety</li> <li>4.2. Environmental concerns</li> <li>4.3. Eagerness to learn</li> <li>4.4. Tidiness and timeliness</li> <li>4.5. Respect for rights of peers and seniors in workplace Respect for rights of peers and seniors in workplace.</li> </ul>
5. Resource implications	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>5.1. Adequate Workplace</li> <li>5.2. Tools and equipment required for work activities</li> <li>5.3. Materials relevant to work activity</li> <li>5.4. Drawing and specifications relevant to the task.</li> </ul>
6. Methods of assessment	<p>Competency should be assessed by:</p> <ul style="list-style-type: none"> <li>6.1. Demonstration</li> <li>6.2. Oral questioning</li> <li>6.3. Written test</li> <li>6.4. Portfolio</li> </ul>
7. Context of assessment	<ul style="list-style-type: none"> <li>7.1. Competency assessment must be done in NSDA accredited assessment centre</li> <li>7.2. Assessment should be done by a NSDA certified/nominated assessor</li> </ul>
<p><b>Accreditation Requirements</b></p> <p>Training Providers must be accredited by National Skills Development Authority (NSDA), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of qualification under National Skills Qualification (NSQF). Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by NSDA.</p>	

## Review of Competency Standard

The Competency Standards for National Skills Certificate in **Plumbing** Standard is reviewed by NSDA on 8 January, 2021.

### Respectable members:

1.	Engr. Anisuzzaman Bhuiyan Rana, Chairperson, Curriculum Development & Training Support Standing Committee, Dhaka. Cell: 01711522658.	Chairperson
2.	Dulal Krishna Saha, Executive Chairman (Secretary), National Skills Development Authority (NSDA)	Chief Guest
3.	Liton Roy, Senior Design Engr, Plumbing, Cell: 01711281501.	Member
4.	Md. Abdul Jalil, Chief Technical Advisor (CTA), Ceramic ISC, Cell: 01712743502, Email: <a href="mailto:abduljalil528@yahoo.com">abduljalil528@yahoo.com</a>	Member
5.	B.M Mofizur Rahman, Curriculum Development & Training Executive, CISC, Cell: 01717518730 Email: <a href="mailto:mofizur.cisc@gmail.com">mofizur.cisc@gmail.com</a>	Member
6.	Bikash Chandra Saha, Assistant Unit Administrator (Mech), UCEP Bangladesh, Cell: 01717308084, Email: <a href="mailto:Bikash.saha@uceobd.org">Bikash.saha@uceobd.org</a>	Member
7.	Mohammed Sirajul Islam, Instructor, BKTTC, Mirpur, Dhaka, Cell: 01554335943, Email: <a href="mailto:sirajbkttc@gmail.com">sirajbkttc@gmail.com</a>	Member
8.	Md. Abu Sayyem, Technical Officer, University of Dhaka, Cell: 01703790088, Email: <a href="mailto:sayyemdu@gmail.com">sayyemdu@gmail.com</a>	Member
9.	Ayne Uddin Ahmed, Senior Instructor, Bangladesh German Technical Training Center (TTC), Cell: 01716632152, Email:	Member
10.	Md. Shahadat Hossain, Specialist-2, SEIP Project, Dhaka. Cell: 01715360652, Email: <a href="mailto:hossainsm61@gmail.com">hossainsm61@gmail.com</a>	Member
11.	Md. Amir Hossain, Process Expert (CS and Curriculum), NSDA. Cell: 01631670445, Email: <a href="mailto:razib.consultant@yahoo.com">razib.consultant@yahoo.com</a>	Member
12.	Md. Quamruzzaman, Director (Skills Standard), NSDA, Cell: 01819189320	Member
13.	Engr. B.M. Shariful Islam, Deputy Director (Skill Standard), Cell: +880 01715010321, Email: <a href="mailto:sharif9375@gmail.com">sharif9375@gmail.com</a>	Member



## Validation of Competency Standard by Standard and Curriculum Validation Committee (SCVC)

The Competency Standards for National Skills Certificate in **Plumbing** Standard is validated by SCVC on 9 January, 2021.

### Respectable members of the SCVC:

1.	Dulal Krishna Saha, Executive Chairman (Secretary), National Skills Development Authority (NSDA)	Chairperson
2.	Liton Roy, Senior Design Engr, Plumbing, Cell: 01711281501.	Member
3.	Md. Abdul Jalil, Chief Technical Advisor (CTA), Ceramic ISC, Cell: 01712743502, Email: <a href="mailto:abduljalil528@yahoo.com">abduljalil528@yahoo.com</a>	Member
4.	B.M Mofizur Rahman, Curriculum Development & Training Executive, CISC, Cell: 01717518730 Email: <a href="mailto:mofizur.cisc@gmail.com">mofizur.cisc@gmail.com</a>	Member
5.	Abu Jafar Khan, Officer (Plumbing), Montage, Cell: 01951177320, Email: <a href="mailto:montagebd@yahoo.com">montagebd@yahoo.com</a>	Member
6.	Bikash Chandra Saha, Assistant Unit Administrator (Mech), UCEP Bangladesh, Cell: 01717308084, Email: <a href="mailto:Bikash.saha@uceobd.org">Bikash.saha@uceobd.org</a>	Member
7.	Mohammed Sirajul Islam, Instructor, BKTTC, Mirpur, Dhaka, Cell: 01554335943, Email: <a href="mailto:sirajbkttc@gmail.com">sirajbkttc@gmail.com</a>	Member
8.	Md. Abu Sayyem, Technical Officer, University of Dhaka, Cell: 01703790088, Email: <a href="mailto:sayyemdu@gmail.com">sayyemdu@gmail.com</a>	Member
9.	Md. Moharam Hossan, Senior Instructor (Plumbing), BRAC Institute of Skills Development, Cell: 01718030373, Email: <a href="mailto:moharam.bisd@gmail.com">moharam.bisd@gmail.com</a>	Member
10.	Ayne Uddin Ahmed, Senior Instructor, Bangladesh German Technical Training Center (TTC), Cell: 01716632152, Email:	Member
11.	Md. Shahadat Hossain, Specialist-2, SEIP Project, Dhaka. Cell: 01715360652, Email: <a href="mailto:hossainsm61@gmail.com">hossainsm61@gmail.com</a>	Member
12.	Md. Amir Hossain, Process Expert (CS and Curriculum), NSDA. Cell: 01631670445, Email: <a href="mailto:razib.consultant@yahoo.com">razib.consultant@yahoo.com</a>	Member
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14.	Engr. B.M. Shariful Islam, Deputy Director (Skill Standard), Cell: +880 01715010321, Email: <a href="mailto:sharif9375@gmail.com">sharif9375@gmail.com</a>	Member