

BANGLADESH TECHNICAL EDUCATION BOARD



NATIONAL COMPETENCY STANDARDS For Plumbing (Pre vocational qualification level - 2)


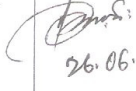
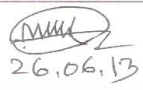

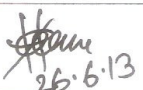

Informal Sector Industry Skill Council
Bangladesh

BANGLADESH TECHNICAL EDUCATION BOARD
June 2013

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Bangladesh Technical Education Board
Standard Curriculum Development Committee
NATIONAL COMPETENCY STANDARDS
for
Plumbing
(Pre-voc 2, NTVQF 1,2&3)
Meeting held on 26.06.2013

Sl. No	Name of members	Address, Contact number	Designation	Signature	Remarks
1.	Md. Israfil Miah	House#183,Road#12/A, West Dhanmondi, Dhaka-1209 01716275851	Chair Person	 26/6/13	CS Documents Approved
2.	Mr. Abdul Mannan	House#183,Road#12/A, West Dhanmondi, Dhaka-1209 01714494725	Member		
3.	Liton Roy Senior Plumbing Design Engineer	Profile Limited, House#18,Road#06, Gulshan-1, Dhaka 01711281501	Member	 26.06.2013	
4.	Abdul Jalil Engineer	Altasish Construction, Khilgnao, Dhaka. 01712743502	Member		
5.	Mr.Md.Abul Kalam Azad, Project Officer	Directorate of Technical Education,01739440146	Member	 26.06.13	
6.	Mr. Gafur Khan Instructor	Bangladesh-Korea TTC, Darussalam, Mirpur, Dhaka, 01918646390	Member	 26-06-13	
7.	Md. Abdul Hannan Deputy Inspector	Bangladesh Technical Education Board ,Dhaka.01834357971	Member	 26.6.13	
8.	Md. Shamim Faraz Instructor	Montage Training & Certification Bangladesh, Tongi, 142- 143, Miraspara, BISIC EPZ, 01737151691	Member	 26.06 2013	

NATIONAL COMPETENCY STANDARDS
For
Plumbing: Pre-voc 2
Structure of Competency

SL. No.	Unit Code and Title		UoC Level	Hours
GENERIC - Compulsory (4 UOCs required)				180
1.	GNPV2001A1	Apply Basic Mathematics	Pre-voc2	40
2.	GNPV2002A1	Apply Occupational Safety & Health (OSH) Practice in the Work place	Pre-voc2	20
3.	GNPV2003A1	Apply basic English	Pre-voc2	60
4.	GNPV2004A1	Apply basic Bangla	Pre-voc2	60
SECTOR SPECIFIC – Compulsory (1UoC required)				30
5.	CONSTSSIHPPV2007A1	Use hand tools and power tools in workplace.*	NTVQF 1	30
OCCUPATION SPECIFIC –Compulsory (4UoCs required)				150
6.	CONSTSSIDFPV20010A1	Use different types of pipe fittings	Pre-voc2	15
7.	CONPLM100112A	Fabricate Pipes *	NTVQF 1	45
8.	CONPLM100212A	Prepare Pipes for Installation *	NTVQF 1	45
9.	CONPLM100312A	Make Pipe Joints and connections *	NTVQF 1	45
			Grand Total	360 Hrs

* Transected from Level-1

GENERIC UNITS

Pre-voc 2

**National Technical Vocational Qualification Framework (NTVQF) for Bangladesh
Plumbing: Pre-voc 2
Unit of Competency**

Unit Code and Title	GNPV2001A1: Apply basic mathematics.
Nominal Hours	40 Hours
Unit Descriptor	This unit of competency requires the knowledge, skills and attitude to apply mathematical method such as addition, subtraction, multiplication and division to measure and find out dimension of object in the workplace.
Elements of Competency	Performance Criteria <i>Italicized terms are elaborated in the range of variables</i>
1. Read and write numeric numbers in Bangla and English.	1.1. Numerical numbers from 0 to 9 in Bangla and English is recognized. 1.2. Arrangement in ascending and descending order of numbers in English and Bangla is demonstrated. 1.3. Reading and writing of numerical numbers in Bangla and English are demonstrated.
2. Use mathematical methods.	2.1. <i>Addition, subtraction, multiplication and division</i> are applied. 2.2. Addition of numbers is carried out. 2.3. Subtraction of numbers from other numbers is demonstrated. 2.4. Multiplication of numbers with other numbers is demonstrated. 2.5. Division of numbers by other numbers is carried out. 2.3. Addition, subtraction, multiplication and division In decimal system are solved. 2.4. Percentage of numbers is calculated.
3. Measure in Metric system.	3.1. Units of measurement of length, breadth, height, weight and thickness in metric system is used. 3.2. Measurement of area and volume of solid and liquid in metric system is carried out. 3.3. Measurement of time is applied.
4. Measure in British system.	4.1. Units of measurement of length, breadth, height, weight and thickness in British system are used. 4.2. Measurement of area and volume of solid and liquid in British system is carried out. 4.3. Measurement of time is applied.
Range of Variables	
Variable	Range

1. Mathematical methods of Addition, subtraction, multiplication and division	Mathematical methods include but not limited to. 1.1. Addition up to six digits is applied. 1.2. Subtraction up to six digits is applied. 1.3. Multiplication up to six digits is applied. 1.4. Division up to six digits is applied. 1.5. Calculation of percentage. 1.6. Calculation of area and volume.
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirement of the current version of the Unit of Competency.	
1. Critical aspect of competency.	1.1. Calculation using addition, subtraction, multiplication and division. 1.2 Measurement of area and volume.
2. Underpinning knowledge.	2.1. Calculation requirements in the workplace. 2.2. Selection of appropriate mathematical methods. 2.3. Use of tools and equipment. 2.4. Symbols and terminology. 2.5. Use of units.
3. Underpinning skill.	3.1. Selection of appropriate mathematical methods from workplace information. 3.2. Selection of workplace information (Charts, tables, equipment, manuals). 3.3. Application of required skills in the workplace.
4. Required attitude.	4.1. Commitment to occupational safety and health. 4.2. Promptness in carrying out activities. 4.3. Tidiness and timeliness. 4.4. Respect for rights of peers, sub-ordinates and seniors in workplace. 4.5. Sincere and honest to the duties. 4.6. Eagerness to learn. 4.7. Communication with peers, sub-ordinates and seniors in the workplace.
5. Resource implication.	The following resources must be provided. 5.1. Calculator. 5.2. Measuring tape. 5.3. Ruler. 5.4. Marking chalk. 5.5. Ball pen. 5.6. Pencil. 5.7. Marker pen. 5.8. White board. 5.9. Flip charts. Tools, equipment and physical facilities. 5.10. Materials and consumables. 5.11. Multimedia.
6. Assessment methods.	<i>Assessment methods may include but not limited to.</i> 6.1. Continuous assessment 6.2. Oral question 6.3. Observation 6.4. Assignment 6.5. Witten test

7. Context of assessment.	Competency may be assessed in the workplace or in a simulated workplace.
<p>Accreditation Requirements</p> <p>Training providers must be accredited by Bangladesh Technical Education Board (BTEB), 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 any national qualification.</p> <p>Accredited providers assessing against this unit of competency must meet the quality assurance requirement set by BTEB.</p>	

**National Technical Vocational Qualification Framework (NTVQF) for Bangladesh
Plumbing: Pre-voc 2
Unit of Competency**

Unit Code and Title	GNPV2002A1: Apply Occupational Safety & Health (OSH) Practice in the workplace
Nominal Hours	20 Hours
Unit Descriptor	This unit of competency requires the knowledge, skills and attitude to apply Occupational Safety & Health (OSH) practice in the workplace.
Elements of Competency	Performance Criteria <i>Italicized</i> terms are elaborated in the range of variables
1. Follow occupation safety and health environment at workplace.	1.1. Personal Protective Equipment (<i>PPE</i>) is used. 1.2. <i>Hazardsat workplace</i> explained. 1.3. Unsafe tools at workplace are listed. 1.4. Flammable materials are recognized. 1.5. Access and storable materials are preserved in designated place. 1.6. <i>OSH materials, resources</i> and equipment are used safely according to specifications, legislation and standard operating procedures.
2. Perform work in safe condition.	2.1. Safe OSH practices are followed. 2.2. Appropriate personal protective equipment (PPE) are used. 2.3. Safety signs, symbols and banners are displayed. 2.4. Location of the fire fighters is identified. 2.5. Clear and free emergency exit passage maintained.
3. Use first aid kits.	3.1. Contents in the <i>first aid kit</i> are selected. 3.2. First aid kit in emergency is used.
4. Maintain healthy and hygiene workplace.	4.1. Aspect of good housekeeping is explained. 4.2. Washing procedure of hands and parts of body is used. 4.3. Useable cleaning agents at workplace is selected. 4.5. Safe drinking water is made available.
Range of Variables	
Variable	Range
1. Hazard at workplace.	Hazard includes but not limited to. 1.1. Accumulation of waste materials. 1.2. Random storage of tools, equipment and furniture. 1.3. Storage of rejected wires, cables and structural materials. 1.4. Storage of flammable materials. 1.5. Congested emergency exit. 1.6. Oil splits floor, passage at workplace.

2. OSH materials and resources.	<p>OSH materials and resources include but not limited to.</p> <ol style="list-style-type: none"> 2.1. Hand gloves. 2.2. Mask. 2.3. Apron. 2.4. Cap. 2.5. Goggle. 2.6. Safety shoes. 2.7. Cautionary signs, symbols and banners to be displayed. 2.8. Evacuation program. 2.9. Fire extinguisher. 2.10. Emergency lights, signals. 2.11. Instructions. 2.12. Stretcher.
3. First aids kit.	<p>First aids kit includes but not limited to.</p> <ol style="list-style-type: none"> 3.1. Sterilized cotton. 3.2. Bandage. 3.3. Scissors. 3.4. Washing agent for injury. 3.5. Medicine for burn. 3.6. Medicine for sudden head-ache.
<p>Evidence Guide</p> <p>The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirement of the current version of the Unit of Competency.</p>	
1. Critical aspect of competency.	<ol style="list-style-type: none"> 1.1. Use of appropriate OSH materials and equipment. 1.2. Handling of OSH materials and equipment.
2. Underpinning knowledge.	<ol style="list-style-type: none"> 2.1. Maintenance of good OSH condition in workplace. 2.2. Use of symbols. 2.2. Evacuation instructions with pictures and words 2.3. Planning of floor layout of workplace. 2.4. Elimination of hazardous condition. 2.5. Use of PPE.
3. Underpinning skill.	<ol style="list-style-type: none"> 3.1. Use of appropriate PPE. 3.2. Preparation of signs and banners. 3.4. Displaying of signs and banners.
4. Required attitude.	<ol style="list-style-type: none"> 4.1. Commitment to occupational safety and health. 4.2. Promptness in carrying out activities. 4.3. Tidiness and timeliness. 4.4. Respect for rights of peers, sub-ordinates and seniors in workplace. 4.5. Sincere and honest to the duties. 4.6. Eagerness to learn. 4.7. Communication with peers, sub-ordinates and seniors in the workplace.
5. Resource implication.	<p>The following resources must be provided.</p> <ol style="list-style-type: none"> 5.1. Drawing paper. 5.2. Drawing templates. 5.3. First aid kit with required contents. 5.4. PPE 5.5. Pen, pencil, marker Pen and eraser. 5.6. Banners showing OSH practice.
6. Method of assessment.	<ol style="list-style-type: none"> 6.1. Oral questions.

	6.2. Observation. 6.3. Assignment. 6.4. Practical display. 6.5. Written test.
7. Context of assessment.	Competency may be assessed in the workplace or in a simulated workplace.
<p>Accreditation Requirements</p> <p>Training providers must be accredited by Bangladesh Technical Education Board (BTEB), 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 any national qualification.</p> <p>Accredited providers assessing against this unit of competency must meet the quality assurance requirement set by BTEB.</p>	

National Technical Vocational Qualification Framework (NTVQF) for Bangladesh
Plumbing: Pre-voc 2
Unit of Competency

Unit Code and Title	GNPV2003A1: Apply Basic English
Nominal Hours	60 Hours
Unit Descriptor	This unit of competency requires the knowledge, skills and attitude to read, write, speak and communicate in English in the workplace.
Elements of Competency	Performance Criteria <i>Italicized terms are elaborated in the range of variables</i>
1. Recognize the alphabets in English.	1.1. Alphabets in English are recognized. 1.2. Reading and writing words in English are carried out. 1.3. Reading and writing of technical terms are performed..
2. Read and write workplace information in English.	2.1. Reading of safety signals, banners, nameplates are demonstrated. 2.2. Writing visual information is demonstrated. 2.3. Learning aids are used.
3. Introduce yourself in English to others.	3.1. Introductory conversation in English is demonstrated. 3.2. Self introduction to other in English is performed. 3.3. Reading and writing of nameplates on equipment, materials in the workplace are demonstrated. 3.4. Reading English text is performed. 3.5. Vocabulary practice are performed.
Range of Variables	
Variable	Range
1. Learning aids.	The following resources must be provided to trainees to practice to read, write and speak in English. 1.1. Books / booklets with pictures with names written in English. 1.2. Work sheets / ID cards. 1.3. Catalogues / Manuals. 1.4. White boards / Marker pens. 1.5. Chalk boards / Chalk. 1.6. OSH information banner. 1.7. Pen / Pencil. 1.8. Flip charts. 1.9. Cassettes player / recorder. 1.10. Cassettes recorded in English conversations. 1.11. Lessons in English conversations. 1.12. TV and monitor. 1.13. Multimedia.
2. Visual information.	Visual aid includes but not limited to. 2.1. Signs. 2.2. Banners. 2.3. Forms. 2.4. Charts. 2.5. Labels. 2.6. Photo graphs captions. 2.7. Catalogues. 2.8. Cartoons. 2.9. Newspaper.

	2.10.Name plate
3. Vocabulary practice.	Vocabulary practices include but not limited to. 3.1. Conversation in English between two learners. 3.2. Group conversation. 3.3. Reading. 3.4. Singing. 3.5. Listening and reproducing.
Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirement of the current version of the Unit of Competency.	
1. Critical aspect of competency.	1.1. Reading and writing words in English are carried out. 1.2. Reading and writing of technical terms are performed.
2. Underpinning knowledge.	2.1. Reading of alphabets in English. 2.2. Pronunciation of English words. 2.3. Reading workplace information in English. 2.4. Reading words and sentences in English. 2.5. Structures of words and sentences in English. 2.6. Reading of words in English related to occupation.
3. Underpinning skill.	3.1. Writing of alphabets in English. 3.2. Writing words and sentences in English. 3.3. Writing workplace information in English. 3.4. Writing words and sentences in English related to occupation.
4. Required attitude.	4.1. Communication with peers, sub-ordinates and seniors in the workplace. 4.2. Commitment to occupational safety and health. 4.3. Promptness in carrying out activities. 4.4. Tidiness and timeliness. 4.5. Respect for rights of peers, sub-ordinate and seniors in workplace. 4.6. Sincere and honest to the duties. 4.7. Eagerness to learn.
5. Resource implication.	The learning aids and other required materials must be provided to learn English.
6. Methods of assessment.	Method of assessment includes but not limited to. 6.1. Continuous assessment. 6.2. Oral questions. 6.3. Assignment. 6.4. Written test. 6.5. Reading test 6.6. Speaking test.
7. Context of assessment.	Competency may be assessed in the workplace or in a simulated workplace.
Accreditation Requirements Training providers must be accredited by Bangladesh Technical Education Board (BTEB), 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 any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirement set by BTEB.	

**National Technical Vocational Qualification Framework (NTVQF) for
Bangladesh Plumbing: Pre-voc 2
Unit of Competency**

Unit Code and Title	GNPV2004A1: Apply Basic Bangla
Nominal Hours	60 Hours
Unit Descriptor	This unit of competency requires the knowledge, skills and attitude to read, write, speak and communicate in Bangla in the workplace.
Elements of Competency	Performance Criteria <i>Italicized terms are elaborated in the range of variables</i>
1. Recognize the alphabets in Bangla.	1.1. Alphabets in Bangla are recognized. 1.2. Reading and writing words in Bangla are carried out. 1.3. Reading and writing of technical terms are performed.
2. Read and write workplace information in Bangla.	2.1. Reading of safety signals, banners, nameplates are demonstrated. 2.2. Writing of visual information are demonstrated. 2.3 Learning aids are used.
3. Introduce yourself in Bangla to others.	3.1. Self introduction to others in Bangla is performed. 3.2. Reading and writing of nameplates on equipment, materials in the workplace are demonstrated. 3.3. Reading Bangla text is performed. 3.4. Vocabulary practices are performed.
Range of Variables	
Variable	Range
1. Learning aids.	The following resources must be provided to trainees to practice to read, write and speak in Bangla. 1.1. Books / booklets with pictures with names written in Bangla. 1.2. Work sheets / ID cards. 1.3. Catalogues / Manuals. 1.4. White boards / Marker pens. 1.5. Chalk boards / Chalk. 1.6. OSH information banner. 1.7. Pen/ Pencil. 1.8. Flip charts. 1.9. Cassettes player / recorder. 1.10. Cassettes recorded in Bangla conversations. 1.11. Lessons in Bangla conversations. 1.12. TV and monitor. 1.13. Multimedia.
2. Visual information.	Visual information includes but not limited to. 2.1. Banner. 2.2. Form. 2.3. Charte. 2.4. Label. 2.5. Photo graphs captions. 2.6. Catalogues. 2.7. News papers.
3. Vocabulary practice.	Vocabulary practices include but not limited to. 3.1. Conversation in Bangla between two learners. 3.2. Conversation In Bangla in groups.

	<p>3.3. Reading 3.4. Singing in Bangla. 3.5. Listening and reproducing.</p>
<p>Evidence Guide The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirement of the current version of the Unit of Competency.</p>	
1. Critical aspect of competency	<p>1.1. Reading and writing words in Bangla are carried out. 1.2. Reading and writing of technical terms are performed.</p>
2. Underpinning knowledge.	<p>2.1. Reading of alphabets in bangla. 2.2. Pronunciation of Bangla words. 2.3. Reading workplace information in Bangla. 2.4. Reading words and sentences in Bangla. 2.5. Structures of words and sentences in Bangla. 2.6. Reading of words in Bangla related to occupation.</p>
3. Underpinning skill.	<p>3.1. Writing of alphabets in Bangla. 3.2. Writing words and sentences in Bangla. 3.3. Writing workplace information in Bangla. 3.4. Writing words and sentences in Bangla related to occupation.</p>
4. Required attitude.	<p>4.1. Communication in workplace. 4.2. Commitment to occupational safety and health. 4.3. Promptness in carrying out activities. 4.4. Tidiness and timeliness. 4.5. Respect for rights of peers, sub-ordinates and seniors in workplace. 4.6. Sincere and honest to the duties. 4.7. Eagerness to learn.</p>
5. Resource implication.	<p>5.1. The learning aids and other required materials must be provided to learn Bangla.</p>
6. Methods of assessment.	<p>Methods of assessment includes but not limited to. 6.1. Continuous assessment. 6.2. Oral questions. 6.3. Assignment. 6.4. Written test. 6.5. Reading test 6.6. Speaking test.</p>
7. Context of assessment.	<p>Competency may be assessed in the workplace or in a simulated workplace.</p>
<p>Accreditation Requirements Training providers must be accredited by Bangladesh Technical Education Board (BTEB), 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 any national qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirement set by BTEB.</p>	

SECTOR SPECIFIC UNITS

Pre-voc 2

**National Technical and Vocational Qualification Framework(NTVQF) for Bangladesh
Plumbing: Pre-voc 2
Unit of Competency**

Unit Code and Title	CONSTSSIHPPV2007A1: Usehand tools and power tools in workplace.
Nominal Hours	30 Hours
Unit Descriptor	This unit of competency requires the knowledge, skills and attitude to use manual and power tools in workplace.
Elements of Competency	Performance Criteria <i>Italicized terms are elaborated in the range of variables</i>
1. Select hand tools.	1.1. Importance of using hand tools is recognized. 1.2. Hand tools are selected as required for the task . 1.3. Unsafe or defective hand tools are separated
2. Select power tools.	2.1. Use of power tools is recognized. 2.2. Appropriate power tools in workplace are selected. 2.3. Unsafe or defective power tools are separated. 2.4. Source of power supply for power tools is ensured.
3. Use hand tools.	3.1. Proper hand tools are used to proper task. 3.2. Safe work practices are followed using hand tools. 3.3. Hand tools are stored carefully.
4. Use power tools.	4.1. Proper power tools are used to proper task. 4.2. Safe workpractices are followed usingpowertools. 4.3. Power tools are disconnected from power source and stored.
5. Perform maintenance of the tools.	5.1. Routine maintenanceof hand and power tools is undertaken according to standard operatingprocedure. 5.2. Cleaning and lubricating agent for tools are collected. 5.3. Defective tools are collected. 5.4. Tools are cleaned. 5.5. Defective tools are repaired / replaced as required. 5.6. Lubricating agents is applied as required. 5.7. Workplace is cleaned. 5.8. Tools are stored in designated location in accordance with manufacturer's standardoperating procedure.

6. Follow OSH as per regulation.	6.1. PPE is used as per instruction. 6.2. Used and waste materials are disposed to designated place. 6.3. Workplace is cleaned and kept tide. 6.4. Proper ventilation in the workplace is ensured. 6.5. Cautionary signals and banners are hoisted properly. 6.6. Exit passage is cleared as per OSH regulation for free evacuation..
Range of Variables	
Variable	Range
1. Hand tools.	Hand tools may include but not limited to. 1.1. Screw drivers. 1.2. Cutting pliers. 1.3. Nose pliers. 1.4. Combination pliers. 1.5. Wrenches. 1.6. Knife. 1.7. Files. 1.8. Centre punch. 1.9. Hack saw. 1.10. Hammer 1.11. Mallet. 1.12. Steel measuring tape. 1.13. Steel ruler. 1.14. Plumb bob. 1.15. Soldering iron. 1.16. Spirit level. 1.17. Taps. 1.18. Tap wrench. 1.19. Dies. 1.20. Die holder. 1.21. Cir-clip pliers (Inside / Out side) 1.22. PP-R joining heat gun.

2. Power tools.	Power tools may include but not limited to: 2.1. Electric hammer hand drill machine. 2.2. Twist drill bits. 2.3. Masonry drill bits. 2.4. Pedestal type drill machine with vice. 2.5. Pedestal type grinding machine with grinding wheel. 2.6. Hand grinding machine with grinding and cutting wheel.
3. Task.	Task may include but not limited to: 3.1. Selection of hand tools. 3.2. Identification of defective tools. 3.3. Application of lubricating oil. 3.4. Cleaning and storing tools.
4. Cleaning and lubricating agent.	Materials may include but not limited to. 4.1. Emery paper 4.2. Detergents. 4.3. Kerosene. 4.4. Petrol / Octane 4.5. Grease 4.6. Waste cotton. 4.7. Coolant.
5. Personal Protective Equipment (PPE).	Personal Protective Equipment (PPE) may include but not limited to: 5.1. Mask; 5.2. Aprons. 5.3. Safety goggles 5.4. Gloves. 5.5. Helmet. 5.6. Safety belt set.
6.Safe work practices.	Safe work practices may include but not limited to: 6.1. Working using personal protective equipment. 6.2. Ensure proper ventilation in the workplace. 6.3. Elimination of hazards at workplace.

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirement of the current version of the Unit of Competency

1. Critical aspect of competency.	<ul style="list-style-type: none"> 1.1. Selection of proper tools for proper task. 1.2. Use of tools, equipment and materials.
2. Underpinning knowledge.	<ul style="list-style-type: none"> 2.1. Structure of different type of hand and power tools. 2.2. Application of different type of hand and power tools. 2.3. Use of PPE. 2.4. Maintenance of hand and power tools. 2.5. Standard maintenance procedures of tolls. 2.6. Standard operating procedure of power tools. 2.7. Storing process of different tools.
3. Underpinning skill.	<ul style="list-style-type: none"> 3.1. Selection of hand tools for proper task. 3.2. Use of power tools. 3.3. Keeping the tools near to hand at workplace. 3.4. Maintenance of hand and power tools 3.5. Maintain the workplace clean and tide. 3.6. Storing the tools in order.
4. Required attitude.	<ul style="list-style-type: none"> 4.1. Communication in workplace. 4.2. Use of proper tools for proper task. 4.3. Commitment to occupational safety and health 4.4. Promptness in carrying out activities. 4.5. Maintain tidiness and timeliness at workplace. 4.6. Respect for rights of peers and seniors in workplace. 4.7. Sincere and honest to the duties.
5. Resource implication.	<p>Following resources must be provided to implement this unit of competency:</p> <ul style="list-style-type: none"> 5.1. Hand and power tools as listed above. 5.2. Cleaning and lubricating materials as above. 5.3. PPE materials.
6. Method of assessment.	<p>Method of assessment may includes but not limited to.</p> <ul style="list-style-type: none"> 6.1. Continuous assessment. 6.2. Demonstration. 6.3. Fill in gaps 6.4. Observation 6.5. Written test

7. Context of assessment.	Competency may be assessed in the workplace or in a simulated workplace.
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Accreditation Requirements

Training providers must be accredited by Bangladesh Technical Education Board (BTEB), 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 any national qualification.

Accredited providers assessing against this unit of competency must meet the quality assurance requirement set by BTEB.

OCCUPATION SPECIFIC UNITS

Pre-voc 2

**National Technical and Vocational Qualification Framework(NTVQF) for Bangladesh
Plumbing: Pre-voc 2
Unit of Competency**

Unit Code and Title	CONSTSSIDFPV20010A1: Use different types of pipe fittings
Nominal Hours	15 Hours
Unit Descriptor	This unit of competency requires the knowledge, skills and attitude to use different types of pipes fittings in plumbing works.
Elements of Competency	Performance Criteria <i>Italicized terms are elaborated in the range of variables</i>
1. Follow OSH as per regulation.	1.1. <i>PPE</i> is used as per instruction. 1.2. Used and waste materials are disposed to designated place. 1.3. Workplace is cleaned and kept tide. 1.4. Proper ventilation in the workplace is ensured. 1.5. Cautionary signals and banners are displayed properly. 1.6. Exit passage is cleaned as per OSH regulation for freeevacuation..
2. Collect pipes and fittings.	2.1. Pipes and fittings are identified and selected. 2.2. Pipes and fittings are collected 2.3. Pipes and fittings are prepared for use
3. Set pipes and fittings.	3.1. Layout diagram of various type of pipe fittings work Is interpreted. 3.2. <i>Fixing materials</i> for pipe fittings are collected. 3.3. Joining device of different pipe fittings is used. 3.4. Pipe fittings are fitted as per instruction.
Range of Variables	
Variable	Range
1. Pipe fittings of GI (Galvanized iron).	GI pipe fittings may include but not limited to: 1.1.Male & Female socket. 1.2.Tee. 1.3.Reducing Tee. 1.4.Reducing bush. 1.5.Push tap. 1.6.Conceal bibcock. 1.7.Gate valve. 1.8.Float valve. 1.9.Elbow.

	<ul style="list-style-type: none"> 1.10.Nipple. 1.11.Socket. 1.12.Shower Rose. 1.13.Bib tap. 1.14.Union. 1.15.Plug. 1.16.Back nut. 1.17.Basin pillar tap. 1.18.Stop cock. 1.19.Lock nut (flusher). 1.20.Lock nut(basin). 1.21.Reducing elbow.
<p>2. Pipe fittings of PP-R (Polypropylene Random)</p>	<p>PP-R pipe fittings may include but not limited to:</p> <ul style="list-style-type: none"> 2.1. Socket, 2.2.Reducing Socket, 2.3.90° Elbow, 2.4.45° Elbow, 2.5.90° Male threaded elbow, 2.6.90° Female threaded elbow, 2.7.Equal T-part, 2.8.Un-equal T- part 2.9.Female threaded T, 2.10.Union, 2.11.Cross part, 2.12.Male adapter , 2.13Female adapter, 2.14.Male threaded union, 2.15.Female threaded union, 2.16.Cap, 2.17.Plug, 2.18.Ball valve, 2.19.Gate valve, 2.20.Conceal valve, 2.21.Double union ball valve, 2.22.Pipe clamp,
<p>3. Pipe fittings of uPVC (Ultraviolet Polyvinyl Chloride)</p>	<p>uPVC pipe fittings may include but not limited to:</p> <ul style="list-style-type: none"> 3.1.90° Equal elbow, 3.2.90° Faucet elbow, 3.3.90° Reducing elbow, 3.4.Plain socket, 3.5.Reducing socket, 3.6.Faucet socket, 3.7.Equal T, 3.8.Equal Faucet T, 3.9.Reducing T, 3.10.Valve socket, 3.11.Reducing Faucet T, 3.12.Screw plug

4. Fixing materials.	Fixing materials may include but not limited to: 4.1.Saddles. 4.2.Clips. 4.3.Rawl plugs. 4.4.Screws
5. PPE.	PPE may include but not limited to 5.1. Eye shield, 5.2.Helmet, 5.3.Leather gloves, 5.4.Full sleeve apron, 5.5.Goggles 5.6.Safety shoes
Evidence Guide 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 aspect of competency.	1.1. Use of appropriate fittings. 1.2. Use of tools, fittings and accessories 1.3. Producing straight lines on wall.
2. Underpinning knowledge.	2.1. Structure of different type of hand and power tools. 2.2. Application of different type of hand and power tools. 2.3. Use of PPE. 2.4. Maintenance of hand and power tools. 2.5. Standard maintenance procedures of tools . 2.6. Standard operating procedure of power tools. 2.7. Storing process of different tools. 2.8. Producing straight horizontal and vertical lines on wall.
3. Underpinning skill.	3.1. Selection of proper tools for proper task. 3.2. Use of tools. 3.3. Keeping the tools near to hand at workplace. 3.4. Maintenance of hand and power tools. 3.5. Maintain the workplace clean and tide. 3.6. Storing the tools in order. 3.7. Laying out of straight lines on wall.
4. Required attitude.	4.1. Communication in workplace. 4.2. Use of proper tools for proper task. 4.3. Commitment to occupational safety and health 4.4. Promptness in carrying out activities. 4.5. Maintain tidiness and timeliness at workplace.

	<p>4.6. Respect for rights of peers, sub-ordinates and seniors in workplace.</p> <p>4.7. Sincere and honest to the duties.</p> <p>4.8. Eagerness to learn.</p>
5. Resource implication.	Tools, materials and PPE must be provided to implement the training program.
6. Method of assessment.	<p>Method of assessment may includes but not limited to:</p> <p>6.1. Continuous assessment.</p> <p>6.2. Demonstration.</p> <p>6.3. Fill in gaps</p> <p>6.4. Observation</p> <p>6.5. Written test</p>
7. Context of assessment.	Competency may be assessed in the workplace or in a simulated workplace.

Accreditation Requirements

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Accredited providers assessing against this unit of competency must meet the quality assurance requirement set by BTEB.

**National Technical and Vocational Qualification Framework (NTVQF) for Bangladesh
Plumbing: Pre-voc 2
Unit of Competency**

Unit Code and Title	CONPLM100112A: Fabricate pipes
Nominal Hours	45 hours
Unit Descriptor	This unit of competency requires the knowledge, skills and attitude to fabricate pipes in plumbing works.
Elements of Competency	Performance Criteria <i>Bold italicized words are detailed in the Range of Variables</i>
1. Collect tools, equipment and materials.	1.1. <i>Tools and equipment</i> are collected according to job requirement. 1.2. <i>Pipes</i> are selected and collected as per specification. 1.3. <i>Materials</i> required for cutting pipe and threads are collected.
3. Cut pipes.	2.1. Pipes are marked according to job requirement. 2.2. Pipes are fixed with vice. 2.3. Pipes are cut according to marking of measurement.
2. Cut threads.	3.1. Pipes are fixed with <i>vice</i> . 3.2. Dies are fitted in the <i>diestocks</i> as per specification. 3.3. Diestock is <i>rotated</i> in clockwise and counter clock wise direction. 3.4. Oil is used during operation. 3.5. Thread on pipes is cut as per requirement. 3.6. Thread is checked and burrs are removed.
4. Install pipes.	4.1. Pipes are made ready to install as per lay out diagram. 4.2. Pipes are joined with fittings as per lay out diagram. 4.3. Pipes are fixed with fixtures as per diagram. 4.4. Pipes are installed finally according to the job requirements of building.
5. Clean the workplace.	5.1. Waste materials are disposed following workplace rules and regulations. 5.2. Tools & equipment are cleaned according workplace procedure. 5.3. Work place is cleaned and kept tidy. 5.4. OSH practice is followed during the works.
Range of Variables	
Variable	Range (May include but not limited to):

1. PPE.	<ul style="list-style-type: none"> 1.1. Dust mask. 1.2. Goggles. 1.3. Safety shoes. 1.4. Apron. 1.5. Gloves.
2. Hand tools.	<ul style="list-style-type: none"> 2.1. Measuring tape. 2.2. Marking chalk. 2.3. Hacksaw with blade. 2.4. Flat file. 2.5. Adjustable wrench. 2.6. Hammer. 2..7 Chain Wrench
3. Size of pipe.	<ul style="list-style-type: none"> 3.1. 12 mm dia. 3.2. 16mm dia. 3.3. 25 mm dia. 3.4.32mm dia. 3.5. 40mm dia. 3.6.50mm dia. 3.7.62mm dia. 3.8. 75mm dia. 3.9. 100 mm dia.
4. Pipes.	<ul style="list-style-type: none"> 4.1. G.I. Pipes. 4.2. PVC/uPVC pipes. 4.3. M.S. Pipes. 4.4. C.I. pipes. 4.5. PP-R pipes.
5. Vice.	<ul style="list-style-type: none"> 5.1. Table vice. 5.2. Pipe vice.
6. Diestock.	<ul style="list-style-type: none"> 6.1. Wrenched diestock. 6.2. Hand diestock.
7. Rotation.	<ul style="list-style-type: none"> 7.1.180 degree angle 7.2. 360 degree angle

Evidence Guide	
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 requires evidence that the candidate : 1.1. Selected pipe size as per specification. 1.2. Cut pipes according to requirement. 1.3. Threaded Pipes according to measurement.
2. Underpinning knowledge and attitude.	2.1. Interpreting drawing. 2.2. Measurement and calculation. 2.3. Types of thread. 2.4. Types of joints
3. Underpinning skills.	3.1. Preparing materials. 3.2. Recognizing different size of plumbing pipe. 3.3. Using of plumbing hand tools.
4. Required underpinning attitude.	4.1. Communication in workplace. 4.2. Use of proper tools for proper task. 4.3. Commitment to occupational safety and health 4.4. Promptness in carrying out activities. 4.5. Maintain tidiness and timeliness at workplace. 4.6. Respect for rights of peers, sub-ordinates and seniors in workplace. 4.7. Sincere and honest to the duties. 4.8. Eagerness to learn.
5. Resource implication.	The following resources should be provided- 5.1. Work place location. 5.2. Tools and equipment are available. 5.3. Materials relevant to activity. 5.4. Drawing and specifications relevant to the task.
6. Method of assessment.	Competency should be assessed through : 6.1. Direct observation 6.2. Demonstration 6.3. Oral questioning
7. Context for assessment.	Competency should be assessed individually by direct observation in the actual work place or simulated condition.

Accreditation Requirements

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**National Technical and Vocational Qualification Framework (NTVQF) for Bangladesh
Plumbing: Pre-voc 2
Unit of Competency**

Unit Code and Title	CONPLM100212A: Prepare Pipes for Installation
Nominal Hours	45 hours
Unit Descriptor	This unit of competency requires the knowledge, skills and attitude to prepare pipes for installation. It includes collecting tools, equipment and materials, cutting and threading pipes for plumbing.
Elements of Competency	Performance Criteria Bold Italicized words are detailed in the Range of Variables
1. Collect tools, equipment and materials.	1.1. Appropriate Personal Protective Equipment is used. 1.2. Tools and equipment are collected according to job requirement. 1.3. Pipes are collected.
2. Cut pipes.	2.1. Pipes are fixed with vice according to the size and shape. 2.2. Pipes are marked according to measurement. 2.3. Pipes are cut according to marking of measurement
3. Cut Thread on Pipes.	3.1. Pipes are fixed with vice according to the measurement. 3.2. Diestocks are adjusted as per specification. 3.3. Diestock is rotated in clockwise with equal pressure. 3.4. Oils are used during operation according to specification. 3.5. Threads are cut with appropriate size and tolerance . 3.6. Thread is checked and adjusted properly.
Range of Variables	
Variable	Range (Include but are 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. Ear muff

2. Tools and equipment.	2.1. Pipe vice. 2.2. Pipe cutter. 2.3. Pipe threaded. 2.4. Pipe wrench. 2.5. Adjustable wrench. 2.6. Measuring tools. 2.7. Hacksaw with blade.
3. Tolerance range.	3.1. G.I. Pipes: cut with a ± 3 mm tolerance on its required length. 3.2. PVC/Plastic pipes: cut squarely on its end with a ± 3 mm tolerance. 3.3. Cast Iron pipes: cut according to required dimension.
4. Pipes.	4.1. G.I. pipes. 4.2. Cast iron pipes. 4.3. Plastic pipes. 4.4. PP-R pipes.
Evidence Guide 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 requires evidence that the candidate : 1.1. Selected and used appropriate processes, tools and equipment to carry out task. 1.2. Selected materials in accordance with specification and job requirement. 1.3. Identified problems that occur and necessary action to rectify. 1.4. Completed preparing pipes for installation according to job requirement.
2. Underpinning knowledge.	2.1. Measurement. 2.2. Interpretation of drawing. 2.3. Materials use and specification. 2.4. Economic use of materials.

3. Underpinning skills.	3.1. Preparing materials. 3.2. Measurement and mathematical skill. 3.3. Using of plumbing hand tools.
4. Required underpinning attitude.	4.1. Communication in workplace. 4.2. Use of proper tools for proper task. 4.3. Commitment to occupational safety and health 4.4. Promptness in carrying out activities. 4.5. Maintain tidiness and timeliness at workplace. 4.6. Respect for rights of peers, sub-ordinates and seniors in workplace. 4.7. Sincere and honest to the duties. 4.8. Eagerness to learn.
5. Resource implications.	The following resources should be provided- 5.1 Work place location. 5.2 Tools and equipment are available. 5.3 Materials relevant to proposed activity. 5.4 Drawing and specifications relevant to the task.
6. Method of assessment.	Competency may be assessed through : 6.1. Direct observation 6.2. Demonstration 6.3. Oral question
7. Context for assessment.	Competency must be assessed individually in the actual work place or simulated environment in the institute.

Accreditation Requirements

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**National Technical and Vocational Qualification Framework (NTVQF) for
Bangladesh Plumbing: Pre-voc 2
Unit of Competency**

Unit Code and Title	CONPLM100312A: Make Pipe Joints and Connections
Nominal Hours	45 hours
Unit Descriptor	This unit of competency requires the knowledge, skills and attitude to make pipe joints and connections.
Elements of Competency	Performance Criteria Bold italicized words are detailed in the Range of Variables
1. Collect tools, equipment and materials.	1.1. <i>Tools and equipment</i> are selected and collected according to job requirement. 1.2. <i>Size of pipes</i> is chosen on the basis of job requirement. 1.3. <i>Pipes</i> are selected and collected properly.
2. Make joints and fitting for GI/PVC/uPVC.	2.1. Measurements are taken in accordance with the layout/plans and specifications. 2.2. <i>PVC/ uPVC pipes are joined</i> with strict adherence. 2.3. Pipe joints are selected as per job requirements. 2.4. Pipe ends are cleaned prior to fit-up according to standard procedure. 2.5. Trial fitting is performed prior to final fit-up /connection.
3. Perform threaded pipe joints and connections.	3.1. Measurements are taken as per working drawing 3.2. Pipes are laid down according to the drawing and specification. 3.3. Threaded connections are done in accordance with approved standard procedure. 3.4. Teflon tape or other related materials are properly fitted to ensure joint is water tight. 3.5. <i>Tools and equipments</i> are selected properly.
4. Make joints leak proof.	4.1. <i>Personal protective equipment (PPE)</i> is used. 4.2. <i>Joints</i> are firmly packed with hemp and fitted with molten pig below the rim the hub. 4.3. Lead or epoxy is used thoroughly at the inside and outside edges of the joints. 4.4. Couplers are used to connect pipes and fittings to hub-less pipes.

Range of Variables	
Variable	Range (Include but are not limited to):
1. PPE.	1.1. Dust mask. 1.2. Goggles. 1.3. Safety shoes. 1.4. Apron. 1.5. Gloves. 1.6. Welding mash. 1.7. Ear muff.
2.PVC/uPVC pipe.	2.1. Right angle. 2.2. 180 ⁰ . 2.3. 30 ⁰ /60 ⁰
3.Tools and equipment.	3.1. Pipe cutter/hack saw with blade. 3.2.Hammer. 3.3. Pipe wrench. 3.4. Pipe thread Cutter. 3.5. Pipe vice. 3.7. Threading machine.
5.Joints.	5.1. T-joint. 5.2. Y-joint. 5.3. Cross joint.

Evidence Guide

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	Competency assessment requires evidence that the candidate: 1.1. Selected materials in accordance with specification and job requirement 1.2. Fitted-up joint and fittings according to job requirement 1.3 Performed threaded connections in accordance with specification 6.1 Caulked joint in accordance with specification and job requirements
2. Underpinning knowledge	2.1. Measurements 2.2. Materials use and specification 2.3. Proper use of plumbing hand tools 2.4. Economic use of materials
3. Underpinning skills	3.1. Interpreting plan and details. 3.2. Preparing materials.
4. Required underpinning attitude	4.1. Communication in workplace. 4.2. Use of proper tools for proper task. 4.3. Commitment to occupational safety and health 4.4. Promptness in carrying out activities. 4.5. Maintain tidiness and timeliness at workplace. 4.6. Respect for rights of peers, sub-ordinates and seniors in workplace. 4.7. Sincere and honest to the duties. 4.8. Eagerness to learn.
5. Resource implications	The following resources should be provided: 5.1. Work place location 5.2. Tools and equipment are available 5.3. Materials relevant to activity 5.4. Drawing and specifications relevant to the task
6. Methods of assessment	Competency may be assessed through : 6.1. Direct observation 6.2. Demonstration 6.3. Oral questioning
7.Context for assessment	Competency must be assessed individually by direct observation in the actual work place or in the simulated workplace.

Accreditation Requirements

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