

# Competency Based Training (CBT) Curriculum Guide for Aluminium Fabricator

[Market Oriented Short Term (MOST), Modular Curriculum]

**Developed by**



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## 1. INTRODUCTION:

The TVET system has a large role to play in economic growth and social development as workforce provider to the labor market and as provider of skills to those who are looking for employment. In the case of Bangladesh, the TVET sector needs major reforms to ensure that issues of quality and capacity, relevance, and access are properly addressed.

This curriculum guide is designed and developed using competency based training (CBT) approach with the aim of producing skilled human resources for respective trade and occupation. This is based on the tasks to be performed for Aluminium Fabricator occupation. The modules are included in course structure section of this curriculum guide. The training methodology is learner friendly where theoretical inputs, demonstration, guided and individual practices will be sufficiently provided to **master the skills at the industry standards**. Sufficient and updated tools and equipment will also be used during the training to provide hands on skills to the trainees. The curriculum guide is developed in consultation with the trainer, mid-level industry supervisors, and skilled workers. Training Institute for Technical Instruction (TITI) has been involved to develop the curriculum.

## 2. AIMS:

The main aim of this training program is to produce medium level skilled workforce (semi-skilled workers) required for the construction sector in the formal and informal sector and create better opportunities for employment and increased revenue.

## 3. OBJECTIVES:

At the end of the training course, the trainees will be able to:

- Practice Occupational Health and Safety (OHS) Procedure;
- Apply Fundamental Skills of Aluminium Fabrication Works;
- Prepare Frames;
- Prepare Shutter;
- Install Shutter within the Frame.

## 4. DESCRIPTION:

This is a competency based training package for the unemployed and underemployed workforce of Bangladesh. The curriculum is based on the tasks to be performed in the Aluminium Fabricator occupation and subsequently these tasks have been grouped to form various modules. This will provide flexibility for the trainees to learn one module at a time. The modules are included in the 'Course Structure' section of this curriculum guide. The training methodology will be **learner-centered** where theoretical input, demonstration, guided and individual practices will sufficiently be provided to the trainees to **master their skills at business and industry standards**. Sufficient tools, equipment and aids will also be used during the training to provide hands on skills to the trainees.

## 5. COURSE STRUCTURE:

Job title: Aluminium Fabricator				Time (hrs.)		
S.N	Modules	Tasks	Nature	Th.	Pr.	Tot.
1	Practice Occupational Health and Safety (OHS) Procedure.	5	T+P	2.5	3.5	6.0
2	Apply Fundamental Skills of Aluminium Fabrication Works	5	T+P	10.0	22.0	32.0
3	Prepare Frames	5	T+P	7.0	74.0	81.0
4	Prepare Shutter	2	T+P	3.0	34.0	37.0
5	Install Shutter within the Frame	2	T+P	2.0	22.0	24.0
<b>All total:</b>		<b>19</b>		<b>24.5</b>	<b>155.5</b>	<b>180</b>

Timings are subject to verification during implementation of the training.

It should further be noted that although Health and Safety is dealt with as a separate module, the principles should be integrated into each task. It should be seen as a way of life and not an activity to be done during training only.

## 6. DURATION:

Total duration of the training is **180 hours** excluding soft skills and On-the-Job Training (OJT)/Apprenticeship. The participants will be sent for wage employment after completion of the training. Only technical modules and occupational health and safety procedure have been considered under this duration.

## 7. TARGET GROUP:

The target group of this training course will be dropped out youths from the formal schooling, job seekers/underemployed young men or women, disadvantaged people. Male and female, both are entitled to receive this training. The basic education for the trainees would be grade-V or equivalent. Above 18 years of age, trainees will be enrolled in the training course.

## 8. GROUP SIZE:

A total of maximum 20 trainees will be placed in each group and provided adequate resources.

#### **9. TARGET LOCATION:**

The training will be implemented in partnership with private training providers and industry led training situated in the different areas of the country.

#### **10. MEDIUM OF INSTRUCTION:**

The medium of instruction for this course will be Bangla but the trainees will also be oriented on technical terminology in English.

#### **11. PATTERN OF ATTENDANCE:**

At least 90% attendee will be required during the theory and practical classes to appear in the internal and final assessment.

#### **12. FOCUS OF THE PROGRAM:**

Since this course is a competency based training, the focus is given on the performance of the trainees rather than the theoretical input. Where practicable, at least 80% of the total training time is allocated for practical training and 20% for theory.

#### **13. ENTRY CRITERIA:**

The following criteria will be considered for the individual to enter into this training program:

- Education: Class 5 or equivalent
- Age: 18 years and above
- Physical and mental health

#### **14. FOLLOW UP SUGGESTION:**

The training institutes who implement CBT program will build rapport with the employers to link graduates with the industries for employment.

Placement: Within one month after completion of the training program, the graduates will be assisted in finding out appropriate and decent wage-based job relevant to the occupation concerned.

To measure the success in job, the follow up will be taken as below:

First follow-up- three months after placement of graduates in job and the next follow up six months after placement of graduates in job.

#### **15. CERTIFICATE REQUIREMENT:**

Training service provider will certify the graduates as a Semi-Skilled Aluminium Fabricator only after successful completion of the training program through systematic skills testing. Certification can also be linked to the Bangladesh Technical and Education Board (BTEB) at the relevant NTVQF level through Recognition of Prior Learning (RPL).

## 16. TRAINEES EVALUATION DETAILS:

Module wise evaluation will be conducted to ensure the performance of the learners. Final evaluation will be conducted to evaluate the participants at the end of the training course. Trainees must secure 100% marks in practical and 80% marks in theoretical examination.

## 17. TRAINERS' QUALIFICATION:

Preference will be given to the trainer's having the following criteria:

- Minimum five years' experience in the respective occupation in the construction industry
- Working experience as an Instructor/Trainer
- Trade Course/Diploma in Civil Engineering

## 18. TRAINER – TRAINEES RATIO:

- For theoretical class, trainer and trainee ratio should be 1:20.
- For practical class, trainer and trainee ratio should be 1:10.
- And for final practical assessment 1:1

## 19. SUGGESTION FOR INSTRUCTION:

Where practicable:

- At least 80% time of the course will be allocated for practical purpose
- Maximum 20% time of the course will be allocated for theoretical purpose
- Follow the safety rules
- Create a friendly learning environment
- Arrange the materials and equipment at the right place
- Trainer/Instructor will be available in the training classes/labs in time
- Take attendance of participants
- Learner centered training
- Encourage the participants to speak
- Arrange question and answer (Q&A) sessions
- Make plans for classroom / workshop instructions
- Prepare lesson plans for theoretical and practical classes

## 20. LIST OF MODULES AND SUB MODULES:

**Module: 1: Practice Occupational Health and Safety (OHS) Procedure.**

**Module: 2: Apply Fundamental Skills of Aluminium Fabrication Works.**

**Module: 3: Prepare Frames.**

**Module: 4: Prepare Shutter.**

**Module: 5: Install Shutter within the Frame.**

## 21. MODULE SEQUENCE:





## **22. DETAILS OF MODULES AND SUB MODULES:**

# Module 1: Practice Occupational Health and Safety (OHS) Procedure

22.1. Module- 1: Practice Occupational Health and Safety (OHS) Procedure					
	<b>Description:</b> It consists of skills and knowledge related to occupational health and safety applicable to the related performance.		Hours		
	<b>Module outcomes:</b> After completion of this module, trainees will be able to <ul style="list-style-type: none"> <li>• Follow safety sign and regulations;</li> <li>• Apply personal protective equipment;</li> <li>• Control house-keeping hazards;</li> <li>• Apply First Aid on minor injuries;</li> <li>• Control Electrical Fire Hazards.</li> </ul>		<b>Th.</b> 2.5	<b>Pr.</b> 3.5	<b>Tot.</b> 6.0
1.	<b>Task:</b> Follow safety sign and regulations.	<b>Terminal Performance Objective (TPO):</b>  <b>Given:</b> Simulated situation  <b>What:</b> Follow safety sign and regulations.  <b>How well:</b> <ul style="list-style-type: none"> <li>• All safety signs and regulations must be followed in the workplace.</li> </ul>	Th. 0.5	Pr. 0.5	Tot. 1.0
	<b>Steps:</b> <ol style="list-style-type: none"> <li>1. Collect the safety sign, emergency exit plan and list of rules and regulation.</li> <li>2. Explain the application of safety sign and regulation.</li> <li>3. Follow the emergency exit plan.</li> <li>4. Comply with safety signs and regulations.</li> </ol>	<b>Enabling objectives:</b> <ul style="list-style-type: none"> <li>• Explain about the necessities of safety sign and regulation.</li> <li>• Explain how to follow the regulation.</li> <li>• Explain the types of the safety sign.</li> <li>• List the safety sign and regulation.</li> <li>• Use the all safety items and rules.</li> <li>• Explain the emergency exit way.</li> </ul>			
	<b>Tools/equipment/materials required:</b> Safety sign, visual aids, danger zone area indicators and regulation charts				
2.	<b>Task:</b> Apply personal protective equipment.	<b>Terminal Performance Objective (TPO):</b>  <b>Given:</b> Protective equipment	Th. 0.5	Pr. 1.0	Tot. 1.5

		<p><b>What:</b> Apply personal protective equipment.</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• The status of the protective equipment must be checked.</li> <li>• Safety goggle, helmet, gloves to be worn at all times during execution of tasks and safety belt must be tightened properly</li> </ul>			
	<p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Collect the personal protective equipment.</li> <li>2. Check the condition of protective equipment.</li> <li>3. Use the protective equipment based on work nature.</li> <li>4. Maintain the protective equipment periodically.</li> <li>5. Preserve the protective equipment in organized way at safe place.</li> </ol>	<p><b>Enabling objectives:</b></p> <ul style="list-style-type: none"> <li>• Explain about the uses of protective equipment.</li> <li>• Explain how to use the protective equipment.</li> <li>• Explain the protective equipment in hazards works.</li> <li>• Use the protective equipment properly.</li> <li>• Explain the positive and negative side of uses the protective equipment.</li> <li>• List the protective equipment.</li> </ul>			
<p><b>Tools/equipment/materials required:</b> Hamlet, Life Jacket, Safety Goggles, Hand Gloves, Safety Belt and Safety shoes/Gumboot.</p>					
3.	<p><b>Task:</b> Control house-keeping hazards.</p>	<p><b>Terminal Performance Objective (TPO):</b></p> <p><b>Given:</b> Simulated situation</p> <p><b>What:</b> Control house-keeping hazards.</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• Tools, equipment and safety materials of workplace must be placed in organized way.</li> <li>• The periodical</li> </ul>	Th. 0.5	Pr. 0.5	Tot. 1.0

						<p>maintenance of tools, equipment and safety materials of workplace must be done.</p>
	<p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. List the expected hazards exist in workplace.</li> <li>2. Place the tools and equipment in workplace following organized way.</li> <li>3. Follow up the periodic maintenance of tools and equipment.</li> <li>4. Handle the tools/equipment carefully.</li> <li>5. Follow up the maintenance of all the electrical fittings and fixtures.</li> <li>6. Identify the faulty tools/equipment.</li> <li>7. Dispose the wastage/outdated tools &amp; equipment from workplace.</li> </ol>	<p><b>Enabling objectives:</b></p> <ul style="list-style-type: none"> <li>• Define house-keeping hazards.</li> <li>• Identify the types of housekeeping hazards.</li> <li>• Explain the necessity of keeping the house neat and clean (including dinning place, washroom/toilets, store and exit path).</li> <li>• Understand safety precautions to be taken for housekeeping hazards.</li> <li>• List the expected house-keeping hazards in the workplace.</li> </ul>				
<p><b>Tools/equipment/materials required:</b> Tools and equipment including safety materials.</p>						
4.	<p><b>Task:</b> Apply First Aid on minor injuries.</p>	<p><b>Terminal Performance Objective (TPO):</b></p> <p><b>Given:</b> Dummy of a simulated victim.</p> <p><b>What:</b> Apply First Aid on minor injuries.</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• Injured person must be isolated from the crowd.</li> <li>• Information of accident must be given to the administration.</li> </ul>	Th. 0.5	Pr. 1.0	Tot. 1.5	
	<p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Isolate the injured person.</li> <li>2. Collect first aid box with necessary medicine,</li> </ol>	<p><b>Enabling objectives:</b></p> <ul style="list-style-type: none"> <li>• Define the minor injury.</li> <li>• Explain about the first aid treatment.</li> <li>• Describe the steps of dressing.</li> </ul>				

	<p>materials and equipment.</p> <ol style="list-style-type: none"> <li>3. Clean the injured area.</li> <li>4. Dress the injured portion properly.</li> <li>5. Use the necessary medicine and other materials as per requirement.</li> <li>6. Inform the administration.</li> <li>7. Restore the First Aid Box.</li> </ol>	<ul style="list-style-type: none"> <li>• List out the first aid medicine, equipment and materials.</li> </ul>								
<p><b>Tools/equipment/materials required:</b> First Aid Box with required medicine and materials.</p>										
5.	<p><b>Task:</b> Control Electrical Fire Hazards</p>	<table border="1"> <thead> <tr> <th data-bbox="764 615 1170 695"><b>Terminal Performance Objective (TPO):</b></th> <th data-bbox="1170 615 1276 695">Th.</th> <th data-bbox="1276 615 1383 695">Pr.</th> <th data-bbox="1383 615 1489 695">Tot.</th> </tr> </thead> <tbody> <tr> <td data-bbox="764 695 1170 1236"> <p><b>Given:</b> Work place situation (real/simulation).</p> <p><b>What:</b> Control Electrical Fire Hazards.</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• Firefighting aids must be checked periodically.</li> <li>• Emergency exit must be followed during evacuation.</li> </ul> </td> <td data-bbox="1170 695 1276 1236">0.5</td> <td data-bbox="1276 695 1383 1236">0.5</td> <td data-bbox="1383 695 1489 1236">1.0</td> </tr> </tbody> </table>	<b>Terminal Performance Objective (TPO):</b>	Th.	Pr.	Tot.	<p><b>Given:</b> Work place situation (real/simulation).</p> <p><b>What:</b> Control Electrical Fire Hazards.</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• Firefighting aids must be checked periodically.</li> <li>• Emergency exit must be followed during evacuation.</li> </ul>	0.5	0.5	1.0
<b>Terminal Performance Objective (TPO):</b>	Th.	Pr.	Tot.							
<p><b>Given:</b> Work place situation (real/simulation).</p> <p><b>What:</b> Control Electrical Fire Hazards.</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• Firefighting aids must be checked periodically.</li> <li>• Emergency exit must be followed during evacuation.</li> </ul>	0.5	0.5	1.0							
<p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check the availability of fire extinguishers, sands buckets/reservoir.</li> <li>2. Wear safety device to work closed to the electrification area.</li> <li>3. Check the fire extinguisher.</li> <li>4. Apply fire extinguisher during small electric fire.</li> <li>5. Inform the police and fire station for mass electric fire.</li> </ol>		<p><b>Enabling objectives:</b></p> <ul style="list-style-type: none"> <li>• Describe the possible electrical fire hazards in workplace.</li> <li>• List the types of electrical hazards.</li> </ul>								
<p><b>Tools/equipment/materials required:</b> Safety materials like fire Extinguisher, Sands, Vacuum cleaner/hand blower etc.</p>										

## Module 2: Apply Fundamental Skills of Aluminium Fabrication Works

## 22.2. Module- 2: Apply Fundamental Skills of Aluminium Fabrication Works

	<b>Description:</b> This module covers basic skills and knowledge about aluminium fabrication works. It provides skills required to carry out basic measurement and calculation, interpret aluminium fabrication drawings and specifications. It also gives the idea to maintain aluminium fabrication tools and equipment.	Hours			
	<b>Module outcomes:</b> After completion of this module, trainees will be able to: <ul style="list-style-type: none"> <li>Apply hand tools;</li> <li>Apply power tools;</li> <li>Take measurement;</li> <li>Interpret drawing &amp; specifications;</li> <li>Maintain tools and equipment.</li> </ul>	<b>Th.</b> <b>10.0</b>	<b>Pr.</b> <b>22.0</b>	<b>Tot.</b> <b>32.0</b>	
1.	<b>Task:</b> Apply hand tools	<b>Terminal Performance Objective (TPO):</b>  <b>Given:</b> Different types of Aluminium Fabrication hand tools.  <b>What:</b> Apply hand tools.  <b>How well:</b> <ul style="list-style-type: none"> <li>Safety precautions are taken while using hand tools.</li> <li>Identify different hand tools used for aluminium fabrication.</li> <li>Right tools are selected for specific job.</li> </ul>	Th. 2.0	Pr. 6.0	Tot. 8.0
	<b>Steps:</b> <ol style="list-style-type: none"> <li>1. Collect aluminium fabrication hand tools.</li> <li>2. Place tools separately on table.</li> <li>3. Identify different hand tools required for aluminium fabrication.</li> <li>4. Demonstrate the use of hand tools.</li> <li>5. Clean the tools after use.</li> </ol>	<b>Enabling objectives:</b> <ul style="list-style-type: none"> <li>List hand tools required for aluminium fabrication.</li> <li>Describe the function of each hand tools.</li> <li>Describe maintenance procedure for each hand tool.</li> </ul>			

	6. Clean the workplace. 7. Keep hand tools in toolbox. 8. Restore the toolbox.									
<b>Tools/equipment/materials required:</b> Measuring Tape, Calculator, Marker Pen, Pencil, Steel Ruler, Tri Square, Spirit Level, Plumb Bob, Water Level Pipe, Writing Pad, Ball Peen Hammer, Star Screwdriver, Flat Screwdriver, Hacksaw Frame with Blade, Combination Pliers, Grip Pliers, File Set, Neon Tester, Mallet, Glasscutter Pen, Oil Can, Rivet Gun with rivets, Glass holder, Anti-cutter, Silicon Gun, Glass Cutter Table, Ladder, Anti-cutter blade, Power Extension Cable, Rope with Anchor and Kerosene Oil.										
<b>PPE:</b> Apron, Safety Shoe, Hand Gloves.										
2.	<b>Task:</b> Apply power tools.	<table border="1"> <thead> <tr> <th data-bbox="763 590 1177 651"><b>Terminal Performance Objective (TPO):</b></th> <th data-bbox="1177 590 1282 651">Th.</th> <th data-bbox="1282 590 1388 651">Pr.</th> <th data-bbox="1388 590 1489 651">Tot.</th> </tr> </thead> <tbody> <tr> <td data-bbox="763 651 1177 1438"> <b>Given:</b> <ul style="list-style-type: none"> <li>• Different types of Aluminium Fabrication power tools.</li> <li>• Power Tools user's manual</li> </ul> <b>What:</b> Apply power tools.              <b>How well:</b> <ul style="list-style-type: none"> <li>• Safety precautions are taken while using power tools.</li> <li>• Identify different power tools used for aluminium fabrication.</li> <li>• Right power tools are selected for specific job.</li> </ul> </td> <td data-bbox="1177 651 1282 1438">2.0</td> <td data-bbox="1282 651 1388 1438">6.0</td> <td data-bbox="1388 651 1489 1438">8.0</td> </tr> </tbody> </table>	<b>Terminal Performance Objective (TPO):</b>	Th.	Pr.	Tot.	<b>Given:</b> <ul style="list-style-type: none"> <li>• Different types of Aluminium Fabrication power tools.</li> <li>• Power Tools user's manual</li> </ul> <b>What:</b> Apply power tools.  <b>How well:</b> <ul style="list-style-type: none"> <li>• Safety precautions are taken while using power tools.</li> <li>• Identify different power tools used for aluminium fabrication.</li> <li>• Right power tools are selected for specific job.</li> </ul>	2.0	6.0	8.0
<b>Terminal Performance Objective (TPO):</b>	Th.	Pr.	Tot.							
<b>Given:</b> <ul style="list-style-type: none"> <li>• Different types of Aluminium Fabrication power tools.</li> <li>• Power Tools user's manual</li> </ul> <b>What:</b> Apply power tools.  <b>How well:</b> <ul style="list-style-type: none"> <li>• Safety precautions are taken while using power tools.</li> <li>• Identify different power tools used for aluminium fabrication.</li> <li>• Right power tools are selected for specific job.</li> </ul>	2.0	6.0	8.0							
	<b>Steps:</b> <ol style="list-style-type: none"> <li>1. Collect aluminium fabrication power tools.</li> <li>2. Place power tools separately.</li> <li>3. Identify different aluminium fabrication power tools.</li> <li>4. Prepare the power tools for cutting/drilling.</li> <li>5. Connect the power cable with the power source.</li> <li>6. Switch ON the power tools.</li> <li>7. Demonstrate use of power</li> </ol>	<b>Enabling objectives:</b> <ul style="list-style-type: none"> <li>• List power tools required for aluminium fabrication.</li> <li>• Describe function of the listed power tools.</li> <li>• Describe the maintenance procedure for each power tool.</li> <li>• Explain the procedure of fixing attachments with power tools.</li> </ul>								

	<p>tools for the nature of job. 8. Switch OFF the power tools. 9. Clean the power tools. 10. Clean the work place. 11. Restore the power tools.</p>				
<p><b>Tools/equipment/materials required:</b> Power Saw, Drill Machine, Hammer Drill Machine and Extension Cable, Aluminium Cutting Disc, Concrete drill bit set, Iron Bit set. <b>PPE:</b> Apron, Safety Mask, Safety Shoe, Hand Gloves, Safety Goggles, Ear plugs.</p>					
3.	<p><b>Task:</b> Take Measurement</p>	<p><b>Terminal Performance Objective (TPO):</b></p> <p><b>Given:</b></p> <ul style="list-style-type: none"> <li>Working drawing/ Instruction Sheet</li> <li>Simulated work environment</li> </ul> <p><b>What:</b> Take Measurement</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>Measurement Accuracy <math>\pm 1</math> mm.</li> <li>Measurements are taken in same level (vertically and horizontally)</li> <li>Diagonal measurement of two opposite corners is equal</li> </ul>	Th. 4.0	Pr. 6.0	Tot. 10.0
<p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Collect working drawing/ instruction sheet.</li> <li>2. Collect measuring tools.</li> <li>3. Measure opening.</li> <li>4. Measure aluminium profile.</li> <li>5. Mark the measured points (start and end point).</li> <li>6. Measure diagonal/rectangular length of opening</li> <li>7. Clean the work place.</li> <li>8. Restore measuring tools and materials.</li> </ol>		<p><b>Enabling objectives:</b></p> <ul style="list-style-type: none"> <li>• Explain how to read measuring tape.</li> <li>• Describe the relation between MKS (Meter Kilogram Second) and FPS (Foot Poundal Second) unit system.</li> <li>• Explain the importance to deduct the thickness of aluminium profile from the length/breadth while measuring opening.</li> </ul>			
<p><b>Tools/equipment/materials required:</b> Measuring Tape, Calculator, Marker Pen, Pencil,</p>					

	Steel Ruler, Tri Square, Spirit Level, Plumb Bob, Water Level Pipe and Writing Pad. <b>PPE:</b> Apron, Safety Shoe.				
4.	<b>Task:</b> Interpret drawing and specifications	<b>Terminal Performance Objective (TPO):</b>  <b>Given:</b> Working drawing of aluminium fabrication works and specification  <b>What:</b> Interpret drawing and specifications  <b>How well:</b> <ul style="list-style-type: none"> <li>Specifications and abbreviations are identified and explained.</li> <li>Signs and symbols are identified and explained.</li> </ul>	Th. 1.0	Pr. 2.0	Tot. 3.0
	<b>Steps:</b> <ol style="list-style-type: none"> <li>Collect drawing and specification.</li> <li>Identify portion of working drawing and specification related to aluminium fabrication.</li> <li>Identify the terms and abbreviations.</li> <li>Identify signs and symbols.</li> <li>Interpret dimensions as per measurement.</li> <li>Interpret signs and symbols</li> <li>Interpret aluminium profile types in the drawing and specification.</li> <li>Restore the drawings.</li> </ol>	<b>Enabling objectives:</b> <ul style="list-style-type: none"> <li>Define specification and working drawing.</li> <li>State different types of aluminum profiles.</li> <li>Differntiate different types of signs and symbols used for aluminium fabrication works.</li> <li>Explain how to interpret dimension.</li> <li>Draw freehand sketch for door, window and partition.</li> </ul>			
	<b>Tools/equipment/materials required:</b> Technical Specification and Drawing, Magnifying Glass (if Needed), Pencil and paper.  <b>PPE:</b> Apron, Safety Shoe.				
5.	<b>Task:</b> Maintain tools & equipment	<b>Terminal Performance Objective (TPO):</b>	Th. 1.0	Pr. 2.0	Tot. 3.0

		<p><b>Given:</b> Different types of tools &amp; equipment</p> <p><b>What:</b> Maintain tools &amp; equipment</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• Tools &amp; equipment are inspected, maintained and repaired periodically.</li> <li>• No damage made while maintaining tools and equipment.</li> <li>• Tools are kept in Toolbox</li> </ul>			
	<p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Collect tools and equipment.</li> <li>2. Check each tool and equipment individually.</li> <li>3. Remove dust and other unwanted materials from tools &amp; equipment.</li> <li>4. Replace Carbon Block and aluminium cutter disc from Power Saw, Chuck of Drill Machine (if necessary).</li> <li>5. Check the faults of tools and equipment.</li> <li>6. Repair the minor faults.</li> <li>7. Keep nonfunctional tools &amp; equipment separately in the store.</li> <li>8. Keep record of nonfunctional tools and equipment.</li> <li>9. Restore the tools &amp; equipment.</li> </ol>	<p><b>Enabling objectives:</b></p> <ul style="list-style-type: none"> <li>• Explain how to maintain tools &amp; equipment.</li> <li>• Explain preventive maintenance methods, techniques and procedure.</li> <li>• Explain the necessity of maintaining the tools &amp; equipment.</li> <li>• Demonstrate the steps to change carbon block of the power saw.</li> <li>• Demonstrate the steps of changing chuck of drill machine.</li> <li>• Describe the procedure of replacing aluminium cutter</li> <li>• Explain the storing procedure.</li> </ul>			
<p><b>Tools/equipment/materials required:</b> Cotton Duster, Brush, Flat Screwdriver, Star Screwdriver, Combination Pliers, Neon Tester, Electric Tape, Extension Cable; and Tools to be maintained.</p> <p><b>PPE:</b> Apron, Hand Gloves, Safety Shoes.</p>					

## Module 3: Prepare Frames

22.3. Module- 3: Prepare Frames						
	<b>Description:</b> This module covers basic skills and knowledge required to prepare frames for aluminium fabrication works. It provides skills to make outer frames for doors/window, make frame for false ceiling, make frame for louver window/door, make frame for fixed partition.			Hours		
	<b>Module outcomes:</b> After completion of this module, trainees will be able to: <ul style="list-style-type: none"> <li>• Make outer frame for doors/window;</li> <li>• Make frame for fixed window/partition;</li> <li>• Make frame for louver window/door;</li> <li>• Install outer frame;</li> <li>• Install frame for false ceiling.</li> </ul>			<b>Th.</b> <b>7.0</b>	<b>Pr.</b> <b>74</b>	<b>Tot.</b> <b>81.0</b>
1.	<b>Task:</b> Make outer frame for doors/window		<b>Terminal Performance Objective (TPO):</b>	<b>Th.</b> 2.0	<b>Pr.</b> 17.0	<b>Tot.</b> 19.0
			<p><b>Given:</b></p> <ul style="list-style-type: none"> <li>• Drawing/measurement sheet</li> <li>• Workshop/workplace.</li> </ul> <p><b>What:</b> Make outer frame for doors/window.</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• 4 corners of the frame are at right angle (90<sup>0</sup>)</li> <li>• No gap seen in the joints.</li> <li>• Measurement error is within ± 1mm.</li> <li>• Aluminium profiles are cut according to the drawing/ measurement sheet.</li> <li>• No scratch seen in the frame.</li> <li>• Mohair is installed at the locking side of the outer frame.</li> <li>• Screw holes are drilled parallel as per</li> </ul>			

		specification /measurement • Drainage cuts are made for drainage purpose.			
	<p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Collect drawing/measurement, hand tools and power tools.</li> <li>2. Take measurements of opening using measuring tape.</li> <li>3. Record measurement on a paper.</li> <li>4. Collect aluminum profile/section as per drawing.</li> <li>5. Mark the measurement on the profile/section.</li> <li>6. Cut aluminium profile using power saw according to measurement for vertical sides.</li> <li>7. Repeat step 6 for horizontal sides.</li> <li>8. Cut top and bottom ends of vertical sides for corner joint.</li> <li>9. Cut top and bottom ends of horizontal sides for corner joint.</li> <li>10. File the cutting edges of profiles to make smooth.</li> <li>11. Drill pair of screw holes on vertical sides maintaining specified distance.</li> <li>12. Drill pair of screw holes on top side maintaining specified distance.</li> <li>13. Drill single screw hole on bottom side maintaining specified distance.</li> <li>14. Drill two screw holes at the each ends of the two vertical sides to make joint.</li> <li>15. Cut two edges of the outer bottom section as per specification for drainage.</li> <li>16. Make holes in the middle of the</li> </ol>	<p><b>Enabling objectives:</b></p> <ul style="list-style-type: none"> <li>• Define the outer side section, outer top section, and outer bottom section.</li> <li>• Discriminate different size and shape of profiles.</li> <li>• Explain the use of 4" wide profile.</li> <li>• Explain the importance of edge cutting and making holes in outer side of bottom section for drainage purpose.</li> <li>• Select drill bit of different size use in aluminum fabrication.</li> <li>• Describe the measurement of outer bottom and outer top profile/section.</li> </ul>			

	<p>outer bottom section as per specification for drainage purpose.</p> <p>17. Make two screw thread at each end of the top and bottom sides.</p> <p>18. Install mohair on the locking side of the outer frame.</p> <p>19. Assemble four sides using eight star screws at the top and bottom end of the vertical sides.</p> <p>20. Clean the tools and materials.</p> <p>21. Clean the work place.</p> <p>22. Restore all tools and unused materials.</p>				
<p><b>Tools/equipment/materials required:</b> Measuring tape, Drill Machine with Iron Bit, Power saw with Aluminum Cutter Disc, Try Square, Screw Driver (flat, and star) Hacksaw Frame with Blade, Hammer, Pencil, Scriber, Mallet (wooden/rubber), Anti Cutter, Aluminum Profile, Grip pliers, Combination Pliers, File Set, Mohair, Screw.</p> <p><b>PPE:</b> Apron, Safety Goggles, Ear Plug, Cotton Hand Gloves and Safety Shoes.</p>					
2.	<p><b>Task:</b> Make frame for fixed window/partition</p>	<p><b>Terminal Performance Objective (TPO):</b></p> <p><b>Given:</b> Drawing/measurement sheet, Workplace/workshop</p> <p><b>What:</b> Make frame for fixed window/partition</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• Every corners of the frame are in right angle (90°).</li> <li>• No gap seen at the joints.</li> <li>• Measurement error is within ± 1mm.</li> <li>• Aluminum profiles are cut according to the drawing/ measurement</li> </ul>	Th. 1.0	Pr. 18.0	Tot. 19.0

		<p>sheet.</p> <ul style="list-style-type: none"> <li>• No scratch seen in the frame.</li> <li>• No scratch seen on the glass</li> <li>• Rubber gasket is not hanging down.</li> <li>• Rubber gasket holds the glass tightly with the frame</li> <li>• No protruding screws are seen.</li> <li>• Frame screws are installed straightly and level.</li> </ul>			
	<p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Collect drawing/measurements, aluminium profiles, hand tools and power tools.</li> <li>2. Take measurements of opening/ work place area .</li> <li>3. Record measurement on a paper.</li> <li>4. Mark the measurement on the profile.</li> <li>5. Cut aluminum profile using power saw according to measurement for vertical sides.</li> <li>6. Drill single screw hole on vertical sides maintaining specified distance to fix to wall.</li> <li>7. Cut fitting angle as per measurement/size.</li> <li>8. Drill two rivet holes on one side of the 1"x1" fitting angle.</li> <li>9. Prepare eight fitting angles.</li> <li>10. Drill two rivet holes at each end of the two vertical sides along with fitting angles holding together using grip pliers.</li> <li>11. Rivet fitting angles attached</li> </ol>	<p><b>Enabling objectives:</b></p> <ul style="list-style-type: none"> <li>• Explain fixed window/partition.</li> <li>• Describe the fixed top and side section, fixed bottom and fixed bottom cover section.</li> <li>• Explain the process of taking measurement of opening.</li> <li>• Describe safety procedure of handling power machines.</li> <li>• Describe measurement taking procedure of bottom and outer top profile/section.</li> <li>• Describe procedure and safety related to installing glass</li> <li>• Discuss way to install rubber gasket on the frame.</li> <li>• Describe importance of installing rubber gasket</li> <li>• Explain importance of installing bottom cover.</li> </ul>			

<p>inside vertical sides.</p> <ol style="list-style-type: none"> <li>12. Place the vertical side on wall.</li> <li>13. Make drill on wall using hammer drill machine.</li> <li>14. Fix vertical sides with wall using specific accessories.</li> <li>15. Measure the distance between 2 vertical sides at top.</li> <li>16. Measure the distance between 2 vertical sides at bottom.</li> <li>17. Mark the measurement on top and bottom profile</li> <li>18. Cut top and bottom profile as per measurement.</li> <li>19. Drill single screw hole on top and bottom sides maintaining specified distance to fix with wall.</li> <li>20. Place the top and bottom side aligning with fitting angle of vertical sides.</li> <li>21. Drill two rivet holes at each end of top and bottom sides along with fitting angles holding together using grip pliers.</li> <li>22. Rivet top and bottom with fitting angles.</li> <li>23. Align top profile with vertical profile to the wall.</li> <li>24. Make drill on wall using hammer drill machine.</li> <li>25. Fix top sides with wall using specific accessories.</li> <li>26. Align the bottom profile with vertical profile.</li> <li>27. Drill on the edge of opening using hammer drill machine.</li> <li>28. Fix bottom sides with floor using specific accessories.</li> <li>29. Measure the distance between vertical side and horizontal sides.</li> <li>30. Mark measurement on glass.</li> </ol>	
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	<p>31. Cut glass according to measurement using glass cutter pen.</p> <p>32. Install the glass in frame.</p> <p>33. Install bottom cover at bottom side.</p> <p>34. Fit gasket to the four sides of both facing.</p> <p>35. Clean work place tools and materials.</p> <p>36. Restore all tools and unused materials.</p>				
<p><b>Tools/equipment/materials required:</b> Measuring Tape, Calculator, Marker Pen, Pencil, Tri Square, Spirit Level, Plumb Bob, Steel Ruler, Writing Pad, Star Screwdriver, Flat Screwdriver, Power Saw, Drill machine with Concrete Drill Bit Set, Hammer Drill Machine, Rivet Gun with Rivet, Mallet, Glass Cutter Pen, Glass holder, Anti-cutter with Blade, Silicone Gun, Kerosene Oil Ladder and Glass Cutting Table.</p> <p><b>PPE:</b> Apron, Safety Mask, Safety Shoe, Hand Gloves, Safety Goggles, Ear plugs.</p>					
3.	<p><b>Task:</b> Make frame for louver window/door.</p>	<p><b>Terminal Performance Objective (TPO):</b></p> <p><b>Given:</b> Drawing/measurement sheet. Workplace</p> <p><b>What:</b> Make frame for louver window/door.</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• Every corners of the frame are in right angle (90<sup>0</sup>).</li> <li>• No gap seen at the joints.</li> <li>• Measurement error is within ± 1mm.</li> <li>• Aluminum profiles are cut according to the drawing/ measurement sheet.</li> <li>• No scratch seen on</li> </ul>	Th. 1.0	Pr. 18.0	Tot. 19.0

		<p>frame.</p> <ul style="list-style-type: none"> <li>• No scratch on the glass</li> <li>• Rubber gasket is not hanging down.</li> <li>• Rubber gasket holds glass tightly with frame.</li> <li>• No protruding screws are seen.</li> <li>• Frame screws are installed straightly and level to the outer frame.</li> </ul>			
	<p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Collect drawing/measurement, aluminum profile, hand tools and power tools.</li> <li>2. Take measurement of opening/ work place area using measuring tape.</li> <li>3. Cut aluminum profile using power saw according to measurement for vertical sides.</li> <li>4. Drill single screw hole on vertical sides maintaining specified distance to fix to wall.</li> <li>5. Cut fitting angle as per measurement/size.</li> <li>6. Drill two rivet holes on one side of fitting angle.</li> <li>7. Prepare eight fitting angles.</li> <li>8. Drill two rivet holes at the each ends of two vertical sides along with fitting angles holding together using grip pliers.</li> <li>9. Rivet fitting angles with vertical sides.</li> <li>10. Place the vertical side on wall.</li> </ol>	<p><b>Enabling objectives:</b></p> <ul style="list-style-type: none"> <li>• Explain process of taking measurement of opening.</li> <li>• Describe safety procedure of handling power machine.</li> <li>• Describe louver U profile and Z profile.</li> <li>• Describe procedures to measure for Louver.</li> <li>• Discuss way to install rubber gasket in frame.</li> <li>• Describe importance of installing rubber gasket</li> <li>• Explain importance of installing bottom cover.</li> </ul>			

	<ol style="list-style-type: none"> <li>11. Make drill on wall using hammer drill machine.</li> <li>12. Fix vertical sides with wall using specific accessories.</li> <li>13. Measure distance between 2 vertical sides at top.</li> <li>14. Measure distance between 2 vertical sides at bottom.</li> <li>15. Cut top and bottom profile as per measurement.</li> <li>16. Drill single screw hole on top and bottom sides maintaining specified distance to fix with wall.</li> <li>17. Place top and bottom side aligning with the fitting angle of vertical sides.</li> <li>18. Drill two rivet holes at each end of top and bottom sides along with fitting angles holding together using grip pliers.</li> <li>19. Rivet top and bottom with fitting angles.</li> <li>20. Align the top side with wall.</li> <li>21. Make drill on the wall using hammer drill machine.</li> <li>22. Fix top sides with wall using specific accessories.</li> <li>23. Align the bottom side with floor</li> <li>24. Drill on floor using hammer drill machine.</li> <li>25. Fix bottom sides with floor using specific accessories.</li> <li>26. Measure distance between vertical side and horizontal sides.</li> <li>27. Cut louver U profile according to measurement using power saw as per specification.</li> <li>28. Drill rivet hole on U profiles.</li> <li>29. Hold louver U profile attaching with both vertical sides of</li> </ol>	
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	<p>frame.</p> <p>30. Drill rivet holes on vertical sides following holes on louver U profiles.</p> <p>31. Rivet louver U profiles with vertical two sides as per specification.</p> <p>32. Align the louver Z profile in middle of louver U profile.</p> <p>33. Hold Louver U profile and Z profile together using Grip Pliers.</p> <p>34. Drill rivet holes on both sides of profile.</p> <p>35. Rivet Louver U profile and Z profiles together.</p> <p>36. Check Louver window/door for faults.</p> <p>37. Clean work place, tools and materials.</p> <p>38. Restore all tools and equipments and materials.</p>					
<p><b>Tools/equipment/materials required:</b> Measuring Tape, Calculator, Marker Pen, Pencil, Tri Square, Spirit Level, Plumb Bob, Steel Ruler, Writing Pad, Star Screwdriver, Flat Screwdriver, Power Saw, Drill machine, Hammer Drill Machine, Rivet Gun, Mallet, Anti-cutter, Silicone Gun and Ladder. Anti-cutter blade, Rivet, Aluminium Cutting Disc, Concrete drill bit set, Iron Bit set and Kerosene Oil.</p> <p><b>PPE:</b> Apron, Safety Mask, Safety Shoe, Hand Gloves, Safety Goggles, Ear plugs.</p>						
4.	<p><b>Task:</b> Install outer frame.</p>	<table border="1"> <tr> <td data-bbox="771 1318 1177 1864"> <p><b>Terminal Performance Objective (TPO):</b></p> <p><b>Given:</b> workshop</p> <p><b>What:</b> Install outer frame.</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• Perpendicular with the wall</li> <li>• No gap seen</li> <li>• Corner joints are strong and accurate</li> <li>• No protruding screws</li> </ul> </td> <td data-bbox="1177 1318 1279 1864">Th. 1.0</td> <td data-bbox="1279 1318 1382 1864">Pr. 6.0</td> <td data-bbox="1382 1318 1484 1864">Tot. 7.0</td> </tr> </table>	<p><b>Terminal Performance Objective (TPO):</b></p> <p><b>Given:</b> workshop</p> <p><b>What:</b> Install outer frame.</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• Perpendicular with the wall</li> <li>• No gap seen</li> <li>• Corner joints are strong and accurate</li> <li>• No protruding screws</li> </ul>	Th. 1.0	Pr. 6.0	Tot. 7.0
<p><b>Terminal Performance Objective (TPO):</b></p> <p><b>Given:</b> workshop</p> <p><b>What:</b> Install outer frame.</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• Perpendicular with the wall</li> <li>• No gap seen</li> <li>• Corner joints are strong and accurate</li> <li>• No protruding screws</li> </ul>	Th. 1.0	Pr. 6.0	Tot. 7.0			

		<p>are seen</p> <ul style="list-style-type: none"> <li>• Frame screws are installed straightly and level to the outer frame</li> <li>• Mohair is placed in right position</li> </ul>			
	<p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Collect drawing/measurement, hand tools and power tools.</li> <li>2. Place the outer frame on bottom side of the opening.</li> <li>3. Check for up-right position of outer frame using plumb bob.</li> <li>4. Mark vertical straight line on the opening.</li> <li>5. Hold the outer frame with the opening firmly.</li> <li>6. Drill hole on the wall following the holes on the outer frame using hammer drill.</li> <li>7. Fix outer frame with the wall using specific accessories.</li> <li>8. Check the fixed outer frame for faults.</li> <li>9. Clean the tools and materials.</li> <li>10. Clean the work place.</li> <li>11. Restore all tools and unused materials.</li> </ol>	<p><b>Enabling objectives:</b></p> <ul style="list-style-type: none"> <li>• Describe the importance of using plumb bob</li> <li>• Explain the steps of using Hammer drill</li> <li>• Describe the safety procedure of using hammer drill</li> <li>• List wall fixing accessories needed to install outer frame.</li> </ul>			
	<p><b>Tools/equipment/materials required:</b> Marker Pen, Plumb Bob, Star Screwdriver, Flat Screwdriver, Hammer Drill Machine, Mallet and Ladder, Dill Bit Set and Wall Fixing Accessories.</p> <p><b>PPE:</b> Apron, Safety Mask, Safety Shoe, Hand Gloves, Safety Goggles, Ear plugs.</p>				
5.	<p><b>Task:</b> Install frame for false ceiling.</p>	<p><b>Terminal Performance Objective (TPO):</b></p> <p><b>Given:</b> Drawing/layout, workplace</p> <p><b>What:</b> Install frame for false ceiling.</p> <p><b>How well:</b></p>	Th. 2.0	Pr. 15.0	Tot. 17.0

		<ul style="list-style-type: none"> <li>• Every corners and joints of the frame are in right angle (90<sup>0</sup>).</li> <li>• No gap seen at the joints.</li> <li>• Measurement error is within <math>\pm 1</math>mm.</li> <li>• Aluminum profiles are cut according to the drawing/ measurement sheet.</li> <li>• Level on the ceiling is marked</li> <li>• No scratch seen on the frame.</li> <li>• No protruding screws are seen</li> <li>• Frame screws are installed straightly and level to the outer frame</li> </ul>			
	<p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Collect drawing/measurement, hand tools and power tools.</li> <li>2. Set level of the false ceiling using water level pipe.</li> <li>3. Mark the false ceiling level at the periphery / side-line of wall.</li> <li>4. Join/cut aluminium ceiling angle as per measurement.</li> <li>5. Drill holes in the ceiling angles as per specification.</li> <li>6. Fix ceiling angle in the wall according to marked line using specific accessories.</li> <li>7. Mark on the ceiling angle for installing main Tee profiles.</li> <li>8. Join/cut main Tee profiles as per measurement</li> <li>9. Insert MS (Mild Steel) angle to the ceiling keeping specified distance.</li> <li>10. Hang main Tee profiles with</li> </ol>	<p><b>Enabling objectives:</b></p> <ul style="list-style-type: none"> <li>• Define false ceiling</li> <li>• Explain how to install Main Tee profile for false ceiling.</li> <li>• Explain different types of drill machine.</li> <li>• Explain the types of drill bits.</li> <li>• State the purpose of punching before drilling.</li> <li>• State the procedure to drill a metal work piece.</li> </ul>			

	<p>MS angle using galvanized wire to the ceiling angle level.</p> <ol style="list-style-type: none"> <li>11. Clip cross Tee profile with main Tee profile keeping right angle (90<sup>0</sup>) and specified gap.</li> <li>12. Place false ceiling board in alternative blocks of the ceiling frame in both directions.</li> <li>13. Check level of the false ceiling using thread.</li> <li>14. Place other false ceiling boards in the remaining open blocks.</li> <li>15. Clean the tools and materials.</li> <li>16. Clean the work place.</li> <li>17. Restore all tools and unused materials.</li> </ol>	
<p><b>Tools/equipment/materials required:</b> Measuring Tape, Thread, Calculator, Marker Pen, Pencil, Tri Square, Plumb Bob, Water Level Pipe, Writing Pad, Power Saw, Drill Machine, Hammer Drill Machine and Extension Cable, Ball Peen Hammer, Sheet cutting scissors, Star Screwdriver, Flat Screwdriver, Combination Pliers, File Set, Neon Tester, Rivet Gun, Anti-cutter with blade, Rivet, Concrete drill bit set, Iron Bit set and Ladder.</p> <p><b>PPE:</b> Apron, Safety Mask, Safety Shoe, Hand Gloves, Safety goggles and Ear Plugs.</p>		

## Module 4: Prepare Shutters

22.4. Module- 4: Prepare Shutters						
	<b>Description:</b> This module deals with the skills and knowledge required for an Aluminium Fabricator in the areas of shutters preparation for window/door as well as net shutter.			Hours		
	<b>Module outcomes:</b> After completion of this module, trainees will be able to- <ul style="list-style-type: none"> <li>• Prepare shutter for sliding window/door;</li> <li>• Prepare net shutter.</li> </ul>			<b>Th.</b> <b>3.0</b>	<b>Pr.</b> <b>34.0</b>	<b>Tot.</b> <b>37.0</b>
1.	<b>Task:</b> Prepare shutter for sliding window/door		<b>Terminal Performance Objective (TPO):</b>  <b>Given:</b> Workshop/workplace and drawing/specification and measurement sheet  <b>What:</b> Prepare shutter for sliding window/door.  <b>How well:</b> <ul style="list-style-type: none"> <li>• Every corners of the frame are in right angle (90<sup>0</sup>).</li> <li>• No gap seen at the joints.</li> <li>• Measurement error is within <math>\pm 1</math>mm.</li> <li>• Aluminum profiles are cut according to the drawing/measurement sheet.</li> <li>• No scratch seen in the frame.</li> <li>• No scratch on the glass</li> <li>• Rubber gasket is not hanging down.</li> <li>• Rubber gasket holds the glass tightly with the frame</li> <li>• Frame screws are</li> </ul>	Th. 2.0	Pr. 22.0	Tot. 24.0

		<p>installed tightly.</p> <ul style="list-style-type: none"> <li>• Mohair is installed on both sides of top profile and inner side of bottom profile.</li> </ul>			
	<p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Collect aluminium profile, tools, equipment and materials.</li> <li>2. Take measurement for shutter profile.</li> <li>3. Cut aluminium profile using power saw machine as per measurement.</li> <li>4. Set mohair as per requirements</li> <li>5. Make a single hole at top of shutter lock and shutter interlock.</li> <li>6. Make two holes at the bottom of shutter lock and shutter interlock.</li> <li>7. Make a groove in middle portion of both shutter lock profile for setting lock/show lock (only for veranda).</li> <li>8. Make "L" pattern joining shutter top and shutter interlock using screws.</li> <li>9. Install two wheels at shutter bottom profile.</li> <li>10. Make "L" pattern joining shutter lock and shutter bottom using screws.</li> <li>11. Cut glass as per measurement using glass cutter.</li> <li>12. Install rubber gasket around the glass.</li> <li>13. Place the glass within two "L" patterns.</li> <li>14. Assemble the two "L" patterns using screws.</li> <li>15. Clean the tools and materials.</li> </ol>	<p><b>Enabling objectives:</b></p> <ul style="list-style-type: none"> <li>• Explain the process of cutting glass</li> <li>• Describe the procedure and safety related to installing glass</li> <li>• Discuss the way to install rubber gasket around the glass.</li> <li>• Describe the importance of installing rubber gasket.</li> <li>• Explain show lock</li> <li>• Describe the process of setting wheels</li> </ul>			

	16. Clean the work place. 17. Restore all tools and materials.				
<p><b>Tools/equipment/materials required:</b> Measuring Tape, Calculator, Marker Pen, Pencil, Tri Square, Steel Rule, Writing Pad, Star Screwdriver, Flat Screwdriver, Power Saw, Drill machine, Mallet, Glass Cutter Pen, Anti-cutter with Disc with Blade, Silicone Gun, Ladder and Glass Cutting Table, Bit set and Kerosene Oil.</p> <p><b>PPE:</b> Apron, Safety Mask, Safety Shoe, Hand Gloves, Safety Goggles, Ear plugs.</p>					
2.	<b>Task:</b> Prepare net shutter	<p><b>Terminal Performance Objective (TPO):</b></p> <p><b>Given:</b> Workshop, drawing/specification and measurement sheet.</p> <p><b>What:</b> Prepare net shutter</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• Aluminum profiles are cut in 45<sup>0</sup> angle</li> <li>• Every corners of the frame are in right angle (90<sup>0</sup>).</li> <li>• No gap seen in the joints.</li> <li>• Measurement error is within ± 1mm.</li> <li>• Aluminum profiles are cut according to the drawing/measurement sheet.</li> <li>• No scratch seen on the frame.</li> <li>• No hole or tear seen and sag on the net.</li> <li>• Rubber gasket is not hanging down.</li> <li>• Rubber gasket holds the net tightly.</li> <li>• Frame screws are installed tightly.</li> </ul>	Th. 1.0	Pr. 12.0	Tot. 13.0
<b>Steps:</b> 1. Collect tools, equipment and		<b>Enabling objectives:</b> <ul style="list-style-type: none"> <li>• Define net shutter.</li> </ul>			

	<p>materials.</p> <ol style="list-style-type: none"> <li>2. Collect aluminium profile as per specification.</li> <li>3. Take measurement for net shutter profile.</li> <li>4. Mark the measurement of the profile.</li> <li>5. Cut aluminium profile as per measurement using power saw machine.</li> <li>6. Set 2 net angles with wheel at top and 2 net angles to wheel at bottom profile.</li> <li>7. Assemble four sides of the net shutter using rivet gun.</li> <li>8. Set mosquito net in the groove at net shutter using rubber gasket</li> <li>9. Fix net handle at net shutter as per specification.</li> <li>10. Clean the tools and materials.</li> <li>11. Clean the work place.</li> <li>12. Restore all tools and unused materials.</li> </ol>	<ul style="list-style-type: none"> <li>• Describe how to cut aluminum profile net shutter</li> <li>• Explain way to fix net in the frame</li> <li>• Discuss way to install rubber gasket around net shutter.</li> <li>• Describe the importance of installing rubber gasket.</li> <li>• Describe procedures of setting wheels.</li> </ul>
<p><b>Tools/equipment/materials required:</b> Measuring Tape, Calculator, Marker Pen, Pencil, Tri Square, Aluminium Cutting with Disc Writing Pad, Star Screwdriver, Flat Screwdriver, Power Saw, Drill machine, Iron Bit Set Rivet with Rivet Gun, Mallet, Anti-cutter with Blade and Ladder.</p> <p><b>PPE:</b> Apron, Safety Mask, Safety Shoe, Hand Gloves, Safety Goggles, Ear plugs.</p>		

## Module 5: Install Shutter within Frame

22.5. Module- 5: Install Shutter within Frame							
	<b>Description:</b> This module deals with the skills and knowledge required to install shutter within frame.				Hours		
	<b>Module outcomes:</b> After completion of this module, trainees will be able to- <ul style="list-style-type: none"> <li>• Install sliding net shutter within outer frame;</li> <li>• Install sliding window/door shutter within outer frame.</li> </ul>				<b>Th.</b> <b>2.0</b>	<b>Pr.</b> <b>22.0</b>	<b>Tot.</b> <b>24.0</b>
1.	<b>Task:</b> Install sliding net shutter within outer frame.	<b>Terminal Performance Objective (TPO):</b>  <b>Given:</b> Workshop/workplace, drawing/specification  <b>What:</b> Install sliding net shutter within outer frame.  <b>How well:</b> <ul style="list-style-type: none"> <li>• The top and bottom wheels of the net shutter are moving smoothly on the rail.</li> <li>• The net shutter is installed straightly</li> <li>• The net shutter fits into the outer frame firmly</li> <li>• No scratch seen on the frame and net</li> </ul>		Th. 1.0	Pr. 10.0	Tot. 11.0	
	<b>Steps:</b> <ol style="list-style-type: none"> <li>1. Collect aluminium profile, tools, equipments and material</li> <li>2. Clean the inner side of the outer frame.</li> <li>3. Place the net shutter into the frame by taking assistance from outside.</li> <li>4. Loosen the adjusting screw of the wheel for smooth installation.</li> <li>5. Place the net frame on the rail.</li> <li>6. Adjust the wheel screw for</li> </ol>	<b>Enabling objectives:</b> <ul style="list-style-type: none"> <li>• Explain the importance of adjusting wheel screw</li> <li>• Describe the safe handling of net shutter</li> <li>• Discuss how to keep the net frame scratch free.</li> <li>• Discuss the steps of hanging net shutter from outside</li> </ul>					

	<p>smooth moving of shutter, perpendicularity and keeping in position.</p> <p>7. Clean the tools and materials.</p> <p>8. Clean the work place.</p> <p>9. Restore all tools and unused materials.</p>				
<p><b>Tools/equipment/materials required:</b> Star screwdriver, Flat screwdriver</p> <p><b>PPE:</b> Safety shoes, apron, hand gloves</p>					
2.	<p><b>Task:</b> Install sliding window/door shutter within outer frame.</p>	<p><b>Terminal Performance Objective (TPO):</b></p> <p><b>Given:</b> Workshop/workplace drawing/specification.</p> <p><b>What:</b> Install sliding window/door shutter within outer frame.</p> <p><b>How well:</b></p> <ul style="list-style-type: none"> <li>• The bottom wheels of the sliding window/door shutter are moving smoothly on the rail.</li> <li>• The sliding window/door shutter is installed straightly</li> <li>• The sliding window/door shutter fits into the outer frame firmly</li> <li>• No scratch seen on the sliding window/door shutter</li> </ul>	Th. 1.0	Pr. 12.0	Tot. 13.0
<p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Clean the inner side of the outer frame.</li> <li>2. Place the sliding window/door shutter into the frame by taking assistance from outside.</li> <li>3. Loosen the adjusting screw of</li> </ol>		<p><b>Enabling objectives:</b></p> <ul style="list-style-type: none"> <li>• Explain the importance of adjusting wheel screw</li> <li>• Describe the safe handling of window/door shutter</li> <li>• Discuss how to keep the window/door shutter scratch free.</li> </ul>			

	<p>the wheel for smooth installation.</p> <ol style="list-style-type: none"> <li>4. Place the sliding window/door shutter on the rail.</li> <li>5. Adjust the wheel screw for smooth moving of shutter, perpendicularity and keeping in position.</li> <li>6. Install sliding lock and nose</li> <li>7. Adjust sliding lock and nose</li> <li>8. Clean the tools and materials.</li> <li>9. Clean the work place.</li> <li>10. Restore all tools and unused materials.</li> </ol>	<ul style="list-style-type: none"> <li>• Discuss the steps of hanging window/door shutter from outside</li> </ul>
<p><b>Tools/equipment/materials required:</b> Star screwdriver, Flat screwdriver, Sliding lock and nose</p> <p><b>PPE:</b> Safety shoes, apron, hand gloves</p>		

### 23. LIST OF TOOLS, EQUIPMENT AND MATERIALS:

#### LIST OF TOOLS AND EQUIPMENT:

S. No	Name of the items	Specification	QTY.	Unit
1.	Drill Machine	Bosch Company or equivalent	05	Pcs
2.	Hammer Drill Machine	Bosch Company or equivalent	05	Pcs
3.	Aluminum Cutter Disc	Bosch Company or equivalent,	05	Pcs
4.	Rivet gun	12", Arrow Fastener Professional Rivet Tool Model RH200S	05	Pcs
5.	Power Saw Machine	Bosch or equivalent	02	Pcs
6.	Sheet Cutting scissor	12 inches	05	Pcs
7.	Silicon gun		05	Pcs
8.	Hack Saw Frame	18"	05	Pcs
9.	Neon Tester	Standard size	05	Pcs
10.	Combination pliers	Standard size	05	Pcs
11.	Grip pliers	8" or standard size	05	Pcs
12.	Measuring tape	3 meters	20	Pcs
13.	Tri - square	12"	05	Pcs
14.	Screw Driver-Flat	6"	05	Pcs
15.	Screw Driver-Star	6"	05	Pcs
16.	Hammer	Half pound	05	Pcs
17.	Scriber	6"	05	Pcs
18.	File set	12"	05	sets
19.	Grip plier	8"	05	Pcs
20.	Plumb bob	Standard Size	05	Pcs
21.	Sprit level	18"	05	Pcs
22.	Water level pipe	1/4"	150	fts
23.	Ball Peen Hammer	Half Pound	05	Pcs

S. No	Name of the items	Specification	QTY.	Unit
24.	Mallet	Half Pound	05	Pcs
25.	Ladder	6 ft. Height	6	Pcs

LIST OF TRAINING MATERIALS:

SI No	Name of the items	Specification	QTY.	Unit
1.	Fitting Aluminum Profile	4" outer side-21'-0"	4	Pcs
		4" outer bottom-21'-0"	2	Pcs
		4" outer top-21'-0"	2	Pcs
		Lock section 21'-0	4	Pcs
		Interlock 21'-0	4	Pcs
		Shutter Top 21'-0	2	Pcs
		Shutter bottom 21'-0	2	Pcs
		1"x1" Fitting Angle 21'-0	2	Pcs
		4" Fixed Top and Side 21'-0	4	Pcs
		4" Fixed bottom 21'-0	2	Pcs
		4" Fixed bottom cord 21'-0	2	Pcs
		Louver U 21'-0	2	Pcs
Louver Z 21'-0	6	Pcs		
2.	Hack Saw Blade	Standard size	1	Goose
3.	Revit	450 number	2000	pcs
4.	Fitting Angle Profile	1/1"	105	Rft
5.	Sliding Mohair	Standard size	01	Roll
6.	Aluminum Cutter Disc	12"	02	Pcs
7.	Pencil		20	Pcs
8.	Fitting Angle Profile	1x1"	84	Rft
9.	Star Screw	1.5"	500	Pcs
10.	Star Screw	½ "	200	Pcs

SI No	Name of the items	Specification	QTY.	Unit
11.	Silicon gum	Standard Size	05	Pcs
12.	Anti Cutter	NT cutter	05	Pcs
13.	Anti Cutter Blade	NT cutter	10	Pcs
14.	Glass Cutter Pen	Standard size	05	Pcs
15.	Drill bit	3/16"	10	Pcs
16.	Drill bit	9/64"	10	Pcs
17.	Hammer Drill Bit	1/4 "	10	Pcs
18.	Drill bit	1/8"	10	Pcs
19.	Drill bit	3/8 "	10	Pcs
20.	Oil Can	Standard size	05	Pcs

#### 24. PHYSICAL FACILITIES FOR 20 TRAINEES:

SI No	Name of the items	Specification	QTY.	Unit
1.	Working Place/Practical Room	50' X 60'	1	Room
2.	Tablet Chair	Plastic /metal/wood	20	Pcs
3.	Instructor Chair Arm Less	Size: 18" X 16" X 36"	2	Pcs
4.	Working Table	Size: 6 X 3' X 2.5'	5	Pcs
5.	Class Room Table	Size: 24" X 30" X 36"	1	Pcs
6.	Display Board	4' X8' X3/4", Surface Cover With White Formica, Border bracing with 3/4 " Aluminum Angle	1	Pcs
7.	White Board	6'X4'X3/4" Surface Cover With White Formica, Border bracing with 3/4 " Aluminum Angle	1	Pcs
8.	Steel cabinet with lock	44" X 72" X 15" 20-22 SWG	1	Pcs
9.	First Aid Box with accessories		1	
10.	Tool Box	Standard Size	5	Nos
11.	White Board Marker	Made in Japan 707	2	Doz
12.	Water Filter	40 Ltr	1	Pcs

SI No	Name of the items	Specification	QTY.	Unit
13.	Fire extinguisher	ABC	2	cylinder

### 25. LIST OF TOOLS IN THE HAND TOOL BOX:

S. No	Name of the items	Specification	QTY.	Unit
1.	Ball Pin Hammer	½ Pound	1	Pc
2.	Combination pliers	6"	1	Pc
3.	Cutting Pliers	8 inches	1	Pc
4.	Star Screw Driver	8 inches	2	Pcs
5.	Flat Screw Driver	8 inches	2	Pcs
6.	Hacksaw Frame with blade	18"	1	Pc
7.	Grip pliers	8"	1	Pc
8.	Plumb bob	Standard Size	1	Pc
9.	Neon tester	Standard Size	1	Pc
10.	Scriber	Standard size	1	Pc
11.	File	12"	1	Set
12.	Adjustable wrench	8"- 12"	1	Pc
13.	Cool Chisel	8"	1	Pc
14.	Steel Measuring Tape	3 meters and 5 meters	2	Pc
15.	Metal Steel Cutting Plier	12"	1	Pc
16.	Try Square	12"	1	Pc
17.	Glass cutter pen	Standard Size	1	Pc
18.	Pencil	-	2	Pcs
19.	Concrete Drill Bit	Different Size	1	set
20.	Thread (Cotton)	-	10	meter
21.	Iron Drill Bit	Different Size	1	Set
22.	Extension Cable	30'	1	Pc
23.	Anti Cutter	Standard Size	1	Set
24.	Sprit Level	12"	1	Pc
25.	Glass holder			

### 26. SUGGESTED REFERENCE BOOKS:

Government of Australia (2011). Fabricate and install residential windows and doors.  
<http://training.gov.au/Training/Detail>.

### 27. CURRICULUM TERMS AND DEFINITION:

<b>Competency</b>	Competency means a cluster of related abilities, commitments, knowledge, and skills that enable a trainees or person to act effectively in a job.
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<b>Curriculum Guide</b>	A curriculum guide is a detail resource for trainers/instructors to conduct training programs effectively. The guide intends to add the trainers/instructors in developing lesson plan, handouts/learning materials, training manuals, and evaluation criteria etc, which are basic elements in the teaching learning process.
<b>Curriculum</b>	A plan for providing sets of learning opportunity to achieve broad goal and related specific objectives for the people by a single school center.
<b>DACUM/RJA</b>	Developing A Curriculum / Rapid Job Analysis. DACUM/RJA is a technique that is used to identify the competencies relevant to a particular occupation. Then the competencies of the DACUM/RJA have been formulated in details to build a curriculum guideline
<b>Duty</b>	Duty is an arbitrary clustering of related tasks in to broad functional area or general area of responsibility of trainees.
<b>Enabling Objective</b>	A statement expressing a knowledge, skills or attitudes those will enable the trainee to accomplish a terminal performance objective.
<b>Instructional Guide</b>	Instructional guide is a well-planned and structured document for the instructor to deliver effective instruction so that trainees can attain learning objectives as per training standards.
<b>Module</b>	A module is defined as a specific learning material. Modules are essentially self-contained. Self-instructional packages, with learning paced by each learner according to his/her individual ability and needs. A module covers either a single element of subject matter content or a group of content elements forming a discrete unit of subject matter or area of skills.
<b>Occupational Analysis</b>	Occupational analysis is a process used to identify the duties and tasks those are important to workers in any given occupation. A number of alternative and acceptable approaches to occupational analysis are available.
<b>Program guide</b>	A program guide is a comprehensive resource for trainers/instructors, planners, and top-level management for planning and implementation of any training programs.
<b>Program Objectives</b>	The objectives are set in a broad way to target to achieve mastery learning of the complete occupation.
<b>Skill</b>	The ability to perform on occupational task with the degree of proficiency required for a given occupation
<b>Step</b>	The smallest discrete or observable aspect of a task.
<b>Task Analysis</b>	Task analysis is the process of identifying and writing down the specific skills, knowledge and attitudes that distinguish someone who performs a task competently from someone who cannot perform the task at all.
<b>Task</b>	A unit of work complete in itself that forms a logical part of on occupation. It can be broken down into discrete steps.
<b>Terminal Performance Objective</b>	The objectives set to attain at the end of the training completion. It includes condition, unit of work and standard of teaching and learning.

## 28. CURRICULUM DEVELOPMENT TEAM:

SL #	Name	Designation	Organization	Contact Number
1.	Md. Khaled Hossain	Junior Instructor (Civil)	Dhaka Polytechnic Institute	01816545481 Engrkhaledct@gmail.com
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4.	Md. Shamsul Alam	Technician	Mafuz Thai Aluminum and Fabricators	01817543202
5.	Sajjad Ahmed	Project Officer	SUDOKKHO	01713302911 sajjad.ahmed@palladiumgrop.com

Overall Supervision: Md. Anisuzzaman, Training Coordinator, SUDOKKHO  
 Workshop Facilitator(s): Md. Anisuzzaman, Anoj Bhattarai and Akim Shrestha  
 Record and Documentation: Anoj Bhattarai and Akim Shrestha, Consultants, TITI, Nepal

## 29. REFERENCES (FOR DEVELOPING CURRICULUMS)

- Competency Profile (Job analysis) developed by SUDOKKHO in May 2015.

## 30. LINKAGES OF SUDOKKHO CURRICULUM WITH BTEB COMPETENCY STANDARDS:

BTEB does not have Competency Standard for this occupation, SUDOKKHO got an approval from BTEB to develop the competency standard.

S.N.	SUDOKKHO Training Module	BTEB Competency Standards
1.	Practice Occupational Health and Safety (OHS) Procedure	GC100312A: Practice workplace cleanliness GC100412A: Practice occupational health and safety (OHS)
2.	Apply Fundamental Skills of Aluminium Fabricator Works	NA
3.	Prepare Frames	NA
4.	Prepare Shutter	NA
5.	Install Shutter within the Frame	NA

**31. SPECIAL NOTE FOR TRAINING PROVIDERS:**

Since the technology is moving fast, if there will have any new demand/skills beyond the curriculum guide, please send the comments and suggestions to the address given in the curriculum. The project believes that the development has no boundaries.



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