

Irrigation and Drainage

Level I



TVET Curriculum Version-I

Based on March, 2022, Version- I Occupational standard

May, 2022

Addis Ababa, Ethiopia

Acknowledgements

The Ministry of Labor and skill wishes to thank and appreciation to MoLS leaders and experts, Regional Labor and skill/training Bureaus leader, experts, TVET College Deans, Instructors and industry experts who contribute their time and professional experience to the development of this Curriculum for **Irrigation and Drainage level I**.

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Preface

The reformed TVET-System is an outcome-based system. It utilizes the needs of the labor market and occupational requirements from the world of work as the benchmark and standard for TVET delivery. The requirements from the world of work are analyzed and documented – taking into account international benchmarking – as occupational standards (OS).

In the reformed TVET-System, curricula and curriculum development play an important role with regard to quality driven comparable TVET-Delivery. The Curricula help to facilitate the training process in a way, that trainees acquire the set of occupational competences (skills, knowledge and attitude) required at the working place and defined in the occupational standards (OS).

This curriculum has been developed by a group of professional experts from different Regional TVET Bureaus, colleges, Industries, Institutes and universities based on the occupational standard for **Irrigation and Drainage Level I**.

The curriculum development process has been actively supported and facilitated by **Ministry of Labor and Skills**.

1. TVET-Program Design

1.1 TVET-Program Title: Irrigation and Drainage level-I

1.2 TVET-Program Description

The Program is designed to develop the necessary knowledge, skills and attitude of the trainees to the standard required by the occupation. The contents of this program are in line with the occupational standard. The Trainees who successfully completed the Program will be qualified to work as an **Irrigation and Drainage Worker** with competencies elaborated in the respective OS. Graduates of the program will have the required qualification to work in the **Agricultural sector** in the field of **Irrigation and Drainage**.

The prime objective of this training program is to equip the Trainees with the identified competences specified in the OS. Graduates are therefore expected to Perform Basic Irrigation and Drainage Works, Identify Basic Machinery and Equipment, Identify Irrigation Water Source and basic water harvesting techniques, Identify and Determine Basic Properties of Soil, Carry out Nursery for Irrigation Work, Observe and Report on Weather, Identify and handle Basic Irrigation Design and Surveying Tools, Perform Basic Measurements and Calculations, Read and Prepare Technical Drawing, Identify Basic Soil Water Plant Relationships, , Identify Irrigation Structure Works, Perform manual Excavation, Apply Agricultural Extension Service, Implement Agribusiness Marketing, Apply Basics of Human Nutrition Practices, Apply 5S Procedures, in accordance with the performance criteria and evidence guide described in the OS.

1.3 Training Program Structure for Level-I

Unit of competence	Sequences of Learning modules		Module Units	Nominal Duration (Hours)
	Module Code	Module Name /Title –		
AGR IRD1 03 0322 Identify Irrigation Water Source and basic water harvesting techniques	AGR IRD1 M01 0522	Irrigation Water Source and harvesting techniques	<ul style="list-style-type: none"> • Irrigation Water sources • water harvesting techniques • Catchment area 	40 hr
AGR IRD1 08 0322 Perform Basic Measurements and Calculations	AGR IRD1 M02 0522	Basic measurement and Calculation	<ul style="list-style-type: none"> • Materials, tools and equipment for measurement • Measurement techniques • GPS 	40 hr
AGR IRD1 07 0322 Identify and handle Basic Irrigation Design and Surveying Tools	AGR IRD1 M03 0522	Irrigation Design and Surveying Tools	<ul style="list-style-type: none"> • principal irrigation design • Surveying tools • Materials, tools and equipment for irrigation design • Handling Surveying Instruments 	80hr
AGR IRD1 11 0322 Identify Irrigation Structure Works	AGR IRD1 M04 0522	Irrigation Structures	<ul style="list-style-type: none"> • Material tools and equipment for irrigation structures • Irrigation schemes • cleaning and storing irrigation work 	46 hr
AGR IRD1 02 0322 Identify Basic Machinery and Equipment	AGR IRD1 M05 0522	Machinery and equipment	<ul style="list-style-type: none"> • Identification of machinery and equipment • Selection of machinery and equipment for irrigation works • Handling machinery and equipment 	30 hr

AGR IRD1 09 0322	Read and Prepare Technical Drawing	AGR IRD1 M06 0522	Technical Drawing	<ul style="list-style-type: none"> • Drawing instruments • Sketch and Lettering • Draw geometry • Multi view and Sectioning • Axonometric projection 	60hr
AGR IRD1 04 0322	Identify and Determine Basic Properties of Soil	AGR IRD1 M07 0522	Basic soil properties	<ul style="list-style-type: none"> • Soil sampling • Soil testing 	60hr
AGR IRD1 06 0322	Observe and Report on Weather	AGR IRD1 M08 0522	Observe and Report on Weather	<ul style="list-style-type: none"> • Weather and climatic data • Reporting OHS hazard 	40hr
AGR IRD1 10 0322	Identify Basic Soil Water Plant Relationships	AGR IRD1 M09 0522	Soil Water Plant Relationships	<ul style="list-style-type: none"> • Physical property of soil • Soil plant relationship • Soil -Water relationship 	46hr
AGR IRD1 05 0322	Carry out Nursery for Irrigation Work	AGR IRD1 M10 0522	Nursery establishment for Irrigation	<ul style="list-style-type: none"> • Materials, tools and equipment for nursery • Nursery activities • Completion of nursery work • Reporting nursery work 	50hr
AGR IRD1 01 0322	Perform Basic Irrigation and Drainage Works	AGR IRD1 M11 0522	Irrigation and Drainage Work	<ul style="list-style-type: none"> • Materials, tools and equipment • Irrigation and drainage work • Handling materials and equipment • Completion of irrigation and drainage activities 	40hr
AGR IRD1 12 0322	Perform manual Excavation	AGR IRD1 12 0322	Manual excavation	<ul style="list-style-type: none"> • Performing manual excavation • work site • Small excavation by hand • Isolation of excavation site • Recording and reporting activities. 	60hr

1.4 Duration of the TVET-Program

The Program will have duration of **-592-**hours including the on school/ Institution training and on-the-job practice or cooperative training time. Such cooperative training based on realities of the industry, nature of the occupation, location of the TVET institution, and other factors will be considered in the training delivery to ensure that trainees acquire practical and workplace experience.

S.No	Module title	TVET Institution training		Cooperative training	Total hours	Remark
		Theory	Practical			
1.	Irrigation and Drainage Works	14	18	14	46	
2.	Basic machinery and equipment	9	12	9	30	
3.	Irrigation Water Source and harvesting techniques	12	16	12	40	
4.	Basic soil Property	18	24	18	60	
5.	Nursery for irrigation Work	15	20	15	50	
6.	Observe and Report on weather	12	16	12	40	
7.	Irrigation Design and Surveying Tools	24	32	24	80	
8.	Basic measurements and calculations	12	16	12	40	
9.	Technical drawing	18	24	18	60	
10.	Soil Water Plant Relationships	14	18	14	46	
11.	Irrigation Structure	12	16	12	40	
12.	Manual Excavation	18	24	18	60	
Total hour		177.6	236.8	177.6	592	Without include Basic competence
Project work title					Maximum one week	

N.B. The cooperative training time can be managed for implementations according to the context of the training environments of the institution.

1.5 Qualification Level and Certification

Qualification is a formal certificate issued by an official agency in recognition to that an individual has been assessed as achieving learning outcomes or competencies to the standard specified for the qualification title. A qualification confers official recognition of value in the labour market and in further education and training. Based on the descriptors elaborated on the Ethiopian National TVET Qualification Framework (NTQF) the qualification of this specific TVET Program is Certificate (I, II, III, IV, V) according to the level. The trainee will be awarded transcript and the institutional certificate after successfully completing all the modules in the level.

1.6 Target Groups

Any citizen who meets the entry requirements under items 1.7 and capable of participating in the training activities is entitled to take part in the Program.

1.7 Entry Requirements

In principle everyone should be able to access training based on the labor market. Hence the prospective participants of this program are any citizen who possess the entry requirement directive of the Ministry of Labor and Skills.

1.8 Mode of Delivery

This TVET-Program is characterized as a formal Program on middle level technical skills. The mode of training delivery is in the institution and co-operative training. Cooperative training is a model of training by the cooperation of enterprises/industries and TVET institutions whereby trainees spend much of their time in the enterprises/industries to acquire industrial knowledge, skills, experiences, and attitudes of the industrial environment and the remaining time in TVET institutions to acquire basic skills and theoretical concepts. Therefore, it is necessary to make the TVET sector more effective by strengthening a system of cooperative training accepted by the industry.

The program will employ different alternatives of cooperative training such as apprenticeships, internship and traineeship based on the nature of the occupation, location of the TVET institutions, and interest of the industry. In addition, in the areas where industry is not sufficiently available the established production and service centers/learning factories in TVET institutions will be used as cooperative training places. The Training-Institution and

identified companies should have to take an agreement to co-operate with regard to the implementation of this program.

1.9 Institutional Assessment

Two types of evaluation will be used in determining the extent to which training outcomes are achieved. The specific training outcomes are stated in the modules. In assessing them, verifiable and observable indicators and standards shall be used.

The *formative assessment* is incorporated in the training modules and form part of the training process. Formative evaluation provides the trainee with feedback regarding success or failure in attaining training outcomes. It identifies the specific training errors that need to be corrected, and provides reinforcement for successful performance as well. For the teacher, formative evaluation provides information for making instruction and remedial work more effective.

Summative Evaluation the other form of evaluation is given when all the modules in the program have been accomplished. It determines the extent to which competence have been achieved. And, the result of this assessment decision shall be expressed in the term of institutional Assessment implementation guidelines..

Techniques or tools for obtaining information about trainees' achievement include oral or written test, demonstration and on-site observation.

1.10 TVET Teachers Profile

The teachers conducting this particular TVET Program are **B** Level and above who have satisfactory practical experiences or equivalent qualifications.

1.11 Training and Assessment methodology

The program is delivered using a variety of training methods. The table below shows training and assessment methodology for non-impaired trainees and with reasonable adjustment for impaired trainees. In addition, as per the nature of the module title the trainer can use recommended and possible training and assessment methodology.

Learning Methods:				
For none impaired trainees	Reasonable Adjustment for Trainees with Disability (TWD)			
	Low Vision	Deaf	Hard of hearing	Physical impairment
Lecture-discussion	<ul style="list-style-type: none"> ❖ Provide large print text ❖ Prepare the lecture in Audio/video ❖ Organize the class room seating arrangement to be accessible to trainees ❖ Write short notes on the black/white board using large text ❖ Make sure the luminosity of the light of class room is kept ❖ Use normal tone of voice ❖ Encourage trainees to record the lecture in audio format ❖ Provide Orientation on the physical feature of the work shop ❖ Summarize main points 	<ul style="list-style-type: none"> ❖ Assign sign language interpreter ❖ Arrange the class room seating to be conducive for eye to eye contact ❖ Make sure the luminosity of the light of class room is kept ❖ Introduce new and relevant vocabularies ❖ Use short and clear sentences ❖ Give emphasis on visual lecture and ensure the attention of the trainees ❖ Avoid movement during lecture time ❖ Present the lecture in video format ❖ Summarize main points 	<ul style="list-style-type: none"> ❖ Organize the class room seating arrangement to be accessible to trainees ❖ Speak loudly ❖ Ensure the attention of the trainees ❖ Present the lecture in video format ❖ Ensure the attention of the trainees 	<ul style="list-style-type: none"> ❖ Organize the class room seating arrangement to be accessible for wheelchairs users. ❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note ❖ Provide Orientation on the physical feature of the work shop

Demonstration	<ul style="list-style-type: none"> ❖ Conduct close follow up ❖ Use verbal description ❖ Provide special attention in the process of guidance ❖ facilitate the support of peer trainees ❖ Prepare & use simulation 	<ul style="list-style-type: none"> ❖ use Sign language interpreter ❖ Use video recorded material ❖ Ensure attention of the trainees ❖ Provide structured training ❖ Show clear and short method ❖ Use gesture ❖ provide tutorial support (if necessary) 	<ul style="list-style-type: none"> ❖ Illustrate in clear & short method ❖ Use Video recorded material ❖ Ensure the attention of the trainees ❖ provide tutorial support (if necessary) 	<ul style="list-style-type: none"> ❖ Facilitate and support the trainees having severe upper limbs impairment to operate equipments/ machines ❖ Assign peer trainees to assist ❖ Conduct close follow up ❖ provide tutorial support (if necessary)
Group discussion	<ul style="list-style-type: none"> ❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member ❖ Brief the thematic issues of the work 	<ul style="list-style-type: none"> ❖ Use sign language interpreters ❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member 	<ul style="list-style-type: none"> ❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member ❖ Inform the group members to speak loudly 	<ul style="list-style-type: none"> ❖ Introduce the trainees with their peers
Exercise	<ul style="list-style-type: none"> ❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process 	<ul style="list-style-type: none"> ❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/practical training ❖ Introduce new and relevant vocabularies 	<ul style="list-style-type: none"> ❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/practical training 	<ul style="list-style-type: none"> ❖ Assign peer trainees ❖ Use additional nominal hours if necessary

<p>Individual assignment</p>	<ul style="list-style-type: none"> ❖ prepare the assignment questions in large text ❖ Encourage the trainees to prepare and submit the assignment in large texts ❖ Make available recorded assignment questions ❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy 	<ul style="list-style-type: none"> ❖ Use sign language interpreter ❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material 	<ul style="list-style-type: none"> ❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material 	
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Assessment Methods:				
Interview		<ul style="list-style-type: none"> ❖ Use sign language interpreter ❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign language interpreter ❖ Use short and clear questioning ❖ Time extension 	<ul style="list-style-type: none"> ❖ Speak loudly ❖ Using sign language interpreter if necessary 	<ul style="list-style-type: none"> ❖ Use written response as an option for the trainees having speech challenges
Written test	<ul style="list-style-type: none"> ❖ Prepare the exam in large texts ❖ Use interview as an option if necessary ❖ Prepare the exam in audio format ❖ Assign human reader (if necessary) ❖ Time extension 	<ul style="list-style-type: none"> ❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers ❖ Avoid essay writing ❖ Time extension 	<ul style="list-style-type: none"> ❖ Prepare the exam using short sentences, multiple choices, true or false, matching and short answers if necessary. 	<ul style="list-style-type: none"> ❖ Use oral response as an option to give answer for trainees having severe upper limb impairment ❖ Time extension for trainees having severe upper limb impairment
Demonstration/Observation	<ul style="list-style-type: none"> ❖ Brief the instruction or provide them in large text ❖ Time extension 	<ul style="list-style-type: none"> ❖ Use sign language interpreter ❖ Brief on the instruction of the exam ❖ Provide activity-based/ practical assessment method ❖ Time extension 	<ul style="list-style-type: none"> ❖ Provide activity based assessment ❖ Brief on the instruction of the exam ❖ Use loud voice ❖ Time extension 	<ul style="list-style-type: none"> ❖ Provide activity based assessment ❖ Conduct close follow up ❖ Time extension

2 Learning Module Design

Module Code and Title	AGR IRD1 M01 0522 : Irrigation Water Source and harvesting techniques
Nominal Duration:	40 Hours
Module Description: This module covers the knowledge, skills and attitudes required for the identification of potential irrigation water source and identify basic water harvesting techniques under direct supervision. It requires the ability to identify potential irrigation water sources, water harvesting techniques and the ability of catchment area identification.	
Training Outcomes At the end of the module the trainee will be able to: <ul style="list-style-type: none"> • Identify irrigation water sources • Identify water harvesting techniques • Identify catchment area 	
Module Contents: Unit one: Irrigation water sources <ol style="list-style-type: none"> 1.1. Identify potential water sources 1.2. Water contributors 1.3. Soil moisture status 1.4. Recharge ground water table 1.5. Afforestation on degraded land Unit two: Water harvesting techniques <ol style="list-style-type: none"> 2.1 Water harvesting principles 2.2 Surface and ground water hydrology 2.3 Site selection for water harvesting 2.4 Identification of water harvesting techniques 2.5 Selection of shade & lining materials Unit Three: Catchment area <ol style="list-style-type: none"> 3.1. Characteristics of catchment area and climatic variables 3.2. Water source identification 3.3. OHS hazards 	

Learning Methods:

- Lecture
- Group discussion
- Demonstration
- Simulation
- Role playing
- Case study
- Problem based learning
- Field visit
- Brainstorming

Assessment Methods:

- Written test
- Oral questioning
- Practical demonstration
- Presentation
- Project work vs Product evaluation
- Observation in prepared checklist
- Direct observed practice

Assessment Criteria:

Unit 1 : Irrigation water sources

- Identify potential areas
- Identify water contributors
- Check soil moisture status
- Check level of ground water
- Identify type and species of trees for afforestation

Unit 2: Water harvesting techniques

- Identify water harvesting principles
- Identify surface and ground water hydrology
- Identify site for water harvesting
- Chose/identify water harvesting technique
- Select shade & lining materials

Unit 3: Catchment area

- Characterize catchment area against climatic variables
- Identify water sources
- Identify OHS hazards in the working area

Module Code and Title	AGR IRD1 M02 0522: Basic measurement and calculation
Nominal Duration:	40Hours
<p>Module Description: This module covers the knowledge, skills, and attitudes required to perform simple measurement and calculation techniques, prepare materials, tools and equipment for measurements, and working with handheld GPS.</p>	
<p>Training Outcomes</p> <p>At the end of the module the trainee will be able to:</p> <ul style="list-style-type: none"> • Apply Standard and Principle • Perform Measurement • Carry out Calculation • Operate GPS 	
<p>Module Contents:</p> <p>Unit one: Standard and Principle of Estimation</p> <ol style="list-style-type: none"> 1.1. SI units and Unit conversion principles 1.2. Standards and code of practice 1.3. Irrigation terminology 1.4. Tolerances and Accuracy in measurement 1.5. Work instruction <p>Unit Two: Measurement</p> <ol style="list-style-type: none"> 2.1 Definition and Purpose of measurement 2.2 Measurement and calculation equipment 2.3 Ruler or tape measurement 2.4 Geometrical shape measurement 2.5 Canal and Irrigation field measurement <p>Unit Three: Calculation</p> <ol style="list-style-type: none"> 3.1. Method of calculation 3.2. Scale and grade in material calculation 3.3. Percentage, Ration and Frication 3.4. Area and Volume Calculation in irrigation 3.5. Error estimation 	

Unit Four: GPS

3.1. GPS Setting

3.2. Taking track line and track point

3.3. Perform reading and measurement data

3.4. Loading data

Learning method

- Lecture
- Group discussion
- Demonstration
- Problem based learning
- Brainstorming

Assessment Methods:

- Written test
- Oral questioning
- Assignment
- Presentation
- Project work

Assessment Criteria:

Unit 1: Standard and Principle of Estimation

- Convert between SI and Imperial Units
- Follow acceptable standards and code practice
- Understand civil engineering terminology
- Confirm and apply work instructions
- Determine work requirement

Unit 2: Measurement

- Use common measuring instruments
- Measure five separate task with in 1mm accuracy using tape or ruler
- Apply method of obtaining measurement
- Measure geometrical shape

Unit 3: Calculation

- Select appropriate calculation method
- Confirm and record results
- Perform scale and grade calculation
- Perform calculations
- Produce charts and graphs from given information

Unit 4: GPS

- Operate and locate GPS
- Take track line and track point
- Perform the reading and measurement data.
- Load data to the computer

Module Code and Title	AGR IRD1 M03 0522 : Irrigation Design and Surveying
Nominal Duration:	80 Hours
Module Description: This Module covers the knowledge, skill and attitude required to identify, prepare, care and handling of irrigation design and surveying tools, instruments and equipment according to supervisor and organization guidelines	
Training Outcomes At the end of the module the trainee will be able to <ul style="list-style-type: none"> • Irrigation design principles • Basic Surveying tools • Materials, tools and equipment • Handle Surveying Instruments 	
Module Contents: Unit one: Irrigation design principles <ol style="list-style-type: none"> 1.1 Basic surveying tool and equipment 1.2 Irrigation design and surveying instruments <ol style="list-style-type: none"> 1.2.1 Purposes of surveying tool 1.2.2 Components of surveying instrument 1.3 Type of levelling instrument <ol style="list-style-type: none"> 1.3.1 Electronic theodolite leveling 1.3.2 Self-Leveling Surveying 1.3.3 Clinometers Unit Two: Surveying tools and equipment <ol style="list-style-type: none"> 2.1 Distance measuring equipment 2.2 Angle and elevation measurement <ol style="list-style-type: none"> 2.1.1 Abney levels 2.1.2 Boning rods 2.1.3 Dumpy level 2.1.4 Laser levels 2.3 Accessories 	

Unit Three: Materials and tools

- 3.1 Personal Protective Equipment (PPE)
- 3.2 Gender sensitive Irrigation design
- 3.3 OHS hazards

Unit Four: Handle Surveying Instrument

- 4.1 Maintenance of tape and Chains
- 4.2 Transportation of surveying Instrument
- 4.3 Mount and adjusting instrument on tripod
- 4.4 Checking instruments
- 4.5 Clean and Storing equipment

Learning Methods:

- Lecture
- Group discussion
- Demonstration
- Case study
- Problem based learning
- Brainstorming

Assessment Methods:

- Written test
- Oral questioning
- Practical demonstration
- Presentation
- Observation in prepared checklist

Assessment Criteria:

Unit 1: Irrigation design principles

- Identify surveying tool and equipment
- Identify component of surveying instrument
- Purposes of surveying tools for design
- Install electronic theodolite leveling
- Operate Self-Leveling Surveying
- Operate clinometer

Unit 2: Surveying tools and equipment

- List distance measuring equipment
- Measure angle by abney levels
- Measure Boning rods
- Measure angle by dumpy level
- Measure elevation laser levels
- Identify surveying accessories

Unit 3: Materials and tools for irrigation design

- Identify personal protective equipment (PPE)
- Design gender sensitive irrigation
- Identify OHS hazard

Unit 4: Handle surveying instruments

- Maintain tapes and chains
- Transport surveying Instruments
- Mount and adjust instruments on tripod
- Clean and store equipment

Module Code and Title	AGR IRD1 M04 0522 : Irrigation Structures
Nominal Duration:	40Hours
Module Description: This modules covers the knowledge, skills and attitudes required to identify and prepare material, irrigation structure work, maintain, clean up and store worksite and equipment on irrigation systems	
Training Outcomes	
At the end of the module the trainee will be able to:	
<ul style="list-style-type: none"> • Prepare material, tools and equipment • Perform irrigation schemes • Maintain, cleanup of work site 	
Module Contents:	
Unit one: Material tools and equipment preparation	
1.1. Purpose of irrigation structures	
1.2. Equipment and tools selection	
1.3. Techniques of loading and unloading materials	
1.4. Personal protective equipment selection	
1.5. Identification of irrigation structure	
Unit Two: Identification of irrigation schemes	
2.1. Identification of diversion structure	
2.2. Management of irrigation structural network	
Unit Three: Maintaining and cleanup of irrigation work site	
3.1. Checking, maintaining and storing equipment, tool and materials	
3.2. Restoration of work site and environmental improvements	

Learning Methods:

- Lecture
- Group discussion
- Demonstration
- Simulation
- Problem based learning
- Brainstorming

Assessment Methods:

- Written test
- Oral questioning
- Assignment
- Presentation
- Project work

Assessment Criteria:

Unit 1: Material tools and equipment preparation

- Define the purpose of irrigation structures
- Select equipment and tool
- perform techniques of loading and unloading materials
- Select personal protective equipment (PPE)
- Identify irrigation structures

Unit 2: Identification of irrigation schemes

- Identify diversion structures
- Identify and manage conveyance and distribution structures

Unit 3: maintaining and cleanup of irrigation work site

- Check, maintain and store equipment, tool and materials
- Restore work site and environmental improvements

Module Code and Title	AGR IRD1 M05 0522: Basic Machinery and Equipment
Nominal Duration:	30 Hours
Module Description: This module covers the knowledge, skill and attitude required to identify, prepare, check, clean and store basic machinery and equipment for irrigation and drainage.	
<p>Training Outcomes</p> <p>At the end of the module the trainee will be able to:</p> <ul style="list-style-type: none"> • Identify machinery and equipment • Select machinery and equipment • Handle machinery and equipment 	
<p>Module Contents:</p> <p>Unit one: Machinery and equipment identification</p> <ol style="list-style-type: none"> 1.1. Personal protective equipment (PPE) 1.2. Selection and usage of machinery and equipment 1.3. Maintenance and storage machinery and equipment 1.4. Identification of basic machinery and equipment 1.5. Parts of machinery and equipment <p>Unit Two: Basic machinery and equipment Preparation</p> <ol style="list-style-type: none"> 2.1 Identification and segregation faulty machinery and equipment 2.2 OHS hazards <p>Unit Three: Machinery and equipment handling</p> <ol style="list-style-type: none"> 3.1. Cleaning, securing and storing equipment 3.2. Recognizing and reporting equipment faults 	

Learning method

- Lecture
- Group discussion
- Demonstration
- Problem based learning
- Brainstorming

Assessment Methods:

- Written test
- Oral questioning
- Assignment
- Presentation
- Project work

Assessment Criteria:

Unit 1: Machinery and equipment identification

- Identify personal protective clothing and equipment
- Select and use machinery equipment
- Maintain and store machinery equipment
- Identify basic machinery and equipment
- Identify parts of machinery and equipment

Unit 2: Basic machinery and equipment preparation

- Identify machinery and equipment
- Identify and segregate faulty machinery and equipment
- Report OHS hazard

Unit 3: Machinery and equipment handling

- Clean, secure and store equipment
- Recognize and report equipment faults
- Maintain workplace and environmental responsibility

Module Code and Title	AGR IRD1 M06 0522 :Technical Drawing
Nominal Duration:	60 Hours
Module Description: This module covers knowledge, skills and attitudes required to identify and select drawing instruments, sketching and lettering, prepare geometry related to technical drawing, and determine axonometric projection drawings.	
Training Outcomes At the end of the module the trainee will be able to attain;	
<ul style="list-style-type: none"> • Identify drawing instruments • Sketch and lettering • Sketch geometry • Multi view and sectioning • Axonometric projection 	
Module Contents:	
Unit One: Identify drawing instruments	
1.1 Drawing material and measuring tool	
1.2 Table and straight edge	
Unit Two: Sketch and Lettering	
2.1 Line and angle	
2.2 Circular and elliptical object	
2.3 Device measurement	
2.4 Sketch lettering	
Unit Three: Sketch Geometry	
3.1 Points and lines	
3.2 Angles, quadrilateral and polygon	
3.3 Circle and arc	
3.4 Bisecting and dividing	
3.5 Perpendicular and tangent	
Unit Four: Multi View and sectioning	
4.1 Types of line	
4.2 View orientation	
4.3 Sketching auxiliary view	

- 4.4 Multi view drawing
- 4.5 Sketching full section
- 4.6 Sketching half section
- 4.7 Revolve section sketch

Unit Five: Axonometric Projection

- 5.1 Isometric projection
- 5.2 Di metric projection
- 5.3 Trimetric projection

Learning Methods:

- Lecture
- Group discussion
- Demonstration
- Simulation
- Brainstorming

Assessment Methods:

- Written test
- Oral questioning
- Practical demonstration
- Presentation
- Project work vs Product evaluation
- Direct observed practice

Assessment Criteria:

Unit 1: Identify drawing instruments

- Determine material and measuring tools
- Understand table and straight edge

Unit 2: Sketch and lettering

- Sketch line and angle
- Sketch circular and elliptical object
- Conduct device measurement
- Sketch lettering

Unit 3: Sketch geometry

- Sketch points and lines
- Sketch angles, quadrilateral and polygon
- Draw circles and arc
- Bisecting and divide
- Sketch perpendicular and tangent

Unit 4: Multi view and sectioning

- Identify types of line
- View orientation
- Sketch auxiliary view
- Draw multi view
- sketch full section
- Sketch half section
- Sketch revolved section

Unit 5: Axonometric projection

- Sketch isometric projection
- Sketch di metric projection
- Sketch trimetric projection

Module Code and Title	AGR IRD1 M07 0522 : Basic properties of Soil
Nominal Duration:	60Hours
<p>Module Description: This module covers the processes of determining the basic properties of soil. It requires collect soil samples and perform basic soil test. It includes collect soil sample for test and perform basic soil test principles for determine basic properties of soil.</p>	
<p>Training Outcomes</p> <p>At the end of the module the trainee will be able to:</p> <ul style="list-style-type: none"> • Collect soil sample • Perform basic soil test 	
<p>Module Contents:</p> <p>Unit one: Soil Sample Collection</p> <ol style="list-style-type: none"> 1.1. Purpose of soil sample 1.2. Tools and materials preparation 1.3. Identifying area for soil sample collection 1.4. Locating soil sample using site plan 1.5. Personal protective equipment 1.6. Soil sample techniques 1.7. Labeling and recording soil sample <p>Unit Two: Soil Sample Testing</p> <ol style="list-style-type: none"> 2.1 . Soil profile 2.2 Soil profile determination 2.3 Physical properties of soil 2.4 Chemical properties of soil 2.5 Recording and reporting 	
<p>Learning Methods:</p> <ul style="list-style-type: none"> • Lecture • Group discussion • Demonstration • Problem based learning • Brainstorming 	

Assessment Methods:

- Written test
- Oral questioning
- Assignment
- Presentation
- Project work

Assessment Criteria:

Unit 1: Soil Sample Collection

- Define soil sample
- prepare tools and materials for soil samples
- Identify area for soil sample collection
- Locate soil sample using site plan
- Select personal protective equipment
- Perform soil sample techniques
- Label and record soil samples

Unit two: Soil sample testing

- Define soil profile
- Determine soil profile
- Test physical properties of soil
- Test chemical properties of soil
- Record and report the result

Module Code and Title	AGR IRD1 M08 0522: Observe and Report on Weather
Nominal Duration:	40 Hours
<p>Module Description: This module specifies the outcomes required to observe and report on weather and climate conditions for an agricultural, horticultural or land management enterprise. It also requires the application of skills and knowledge to recognize adverse weather and climate conditions and to monitor record and report on weather and climate information.</p>	
<p>Training Outcomes</p> <p>At the end of the module the trainee will be able to</p> <ul style="list-style-type: none"> • Check weather and climate information • Carry out preventative action • Monitor weather and climate 	
<p>Module Contents:</p> <p>Unit one: Collect weather and climate data</p> <ol style="list-style-type: none"> 1.1 Gather weather condition 1.2 Familiarize change weather and climate situation 1.3 Impact of climate change 1.4 Reporting impact of climate change <p>Unit two: Communicate, weather and climate data</p> <ol style="list-style-type: none"> 2.1 Dissemination of information 2.2 Communicate information 2.3 Determine preventative action. 2.4 Implement action to minimize loss and damage 2.5 Effect of weather condition on irrigation <p>Unit Three: Monitor hazardous weather</p> <ol style="list-style-type: none"> 3.1 Access regular updates 3.2 Review irrigation practice on weather condition. 3.3 Document and recording relevant information 	

Learning Methods:

- Lecture
- Group discussion
- Demonstration
- Field visit
- Brainstorming

Assessment Methods:

- Written test
- Oral questioning
- Practical demonstration
- Presentation
- Project work vs Product evaluation
- Observation in prepared checklist
- Direct observed practice

Assessment Criteria:

Unit 1: Collect weather and climate data

- Determine whether condition
- Identify weather and climate change
- Assesse impact of climate change
- Prepare report

Unit 2: Preventative action

- Disseminate information
- Communicate information with concerned body
- Determine preventative actions.
- Implement preventative action
- Observe weather condition

Unit 3: Monitor hazardous weather

- Access regular updates
- Review irrigation practice on weather condition.
- Document and record relevant information

Module Code and Title	AGR IRD1 M09 0522:Soil Water Plant Relationship
Nominal Duration:	45 Hours
Module Description: This module covers the knowledge skills and attitudes required to investigate Soil Physical characteristics, Soil- plant relationship and also soil- water relationship.	
Training Outcomes At the end of the module the trainee will be able to:-	
<ul style="list-style-type: none"> • Investigate soil physical property • Understand soil- plant relationship • Understand soil -Water relationship 	
Module Contents:	
Unit one: Physical property of soil	
1.1 Soil types	
1.2 Soil characteristics	
Unit two: Soil- plant relationship	
2.1 Soil conditions	
2.2 Soil characteristics affect plant growth and development	
2.3 Effect of soil structure on plant	
Unit three: soil -Water relationship	
3.1. Soil Water Contents	
3.2. Soil Water Tension	
3.3. Water quality	
3.4. Plant water use	

Learning Methods:

- Lecture
- Group discussion
- Demonstration
- Simulation
- Case study
- Problem based learning
- Field visit
- Brainstorming

Assessment Methods:

- Written test
- Oral questioning
- Practical demonstration
- Presentation
- Project work
- Observation in prepared checklist
- Direct observed practice

Assessment Criteria:

Unit 1: Physical property of soil

- Identify tools and equipment used
- Identify Soil types
- Identify soil characteristics

Unit 2: Soil- plant relationship

- Identify soil conditions
- Identify soil characteristics affect plant growth and development
- Determine effect of soil structure on plant

Unit 3: Soil -Water relationship

- Measure soil water content
- Measure soil water tension
- Estimate plant water use
- Test soil water quality

Module Code and Title	AGR IRD1 M10 0522: Manual excavation
Nominal Duration:	60 Hours
<p>Module Description: This unit covers the knowledge, skills and attitudes required to plan and prepare for work, prepare work sites, perform small excavations by hand, complete and isolate the excavation and clean up prior to work and restore them on completion of work.</p>	
<p>Training Outcomes</p> <p>At the end of the module the trainee will be able to:</p> <ul style="list-style-type: none"> • Perform manual excavation • Prepare work site • Perform small excavations by hand • Isolate excavation site • Restore work site • Record and report activities 	
<p>Module Contents:</p> <p>Unit one: Manual excavation</p> <p>1.1 Tools, equipment and materials</p> <p>1.2 Personal protective equipment</p> <p>1.3 Site preparation</p> <p>1.4 Public and environmental risk identification</p> <p>1.5 Legislative and organisational requirement</p> <p>Unit two: Work site preparation</p> <p>2.4 Safety equipment and materials</p> <p>2.5 Securing safety materials and equipment</p> <p>2.6 Excavation method</p> <p>2.7 Environmental damage</p> <p>2.8 Environmental protection</p> <p>2.9 Compliance documentation</p> <p>2.10 Traffic management</p> <p>Unit three: Small excavations by hand</p> <p>3.1 Location and specification confirmation</p> <p>3.2 Location of underground services and taped area</p>	

- 3.3 Excavation dimension
- 3.4 Unstable ground collapse prevention
- 3.5 Barricades placing

Unit four: Excavation site isolate

- 4.1 Loose material cleaning
- 4.2 Work area and material clearing
- 4.3 Confirmation and checking excavation

Unit five: Restoring work site

- 5.1 Backfill excavation
- 5.2 Compaction
- 5.3 Planting or replanting vegetation
- 5.4 Reinstating site

Unit six: Recording and reporting activities

- 6.1 Argument of workplace record
- 6.2 Reporting activities

Learning Methods:

- Lecture
- Group discussion
- Demonstration
- Simulation
- Case study
- Problem based learning
- Field visit
- Brainstorming

Assessment Methods:

Written test

- Oral questioning
- Practical demonstration
- Presentation
- Project work vs Product evaluation
- Observation in prepared checklist
- Direct observed practice

Assessment Criteria:

Unit 1: Manual excavation

- select tools, equipment and materials
- Select personal protective equipment selection
- prepare site
- Identify Public and environmental risks
- Identify legislative and organisational requirements

Unit 2: Work site preparation

- Select and use safety equipment and materials
- Secure safety materials and equipment
- Identify excavation methods
- Identify environment damages
- Identify environmental protection requirements
- Apply compliance documentation
- Manage traffic

Unit 3: Small excavations by hand

- Confirm location and specification
- Identify location of underground services and taped areas
- Use excavation dimensioning tools
- Prevent unstable ground collapse
- Place Barricades

Unit 4: Excavation site isolate

- Clean loose materials
- Clear work area and materials
- Confirm and check excavation

Unit 5: Restoring work site

- Backfill
- Compact
- Plant or replant vegetation
- Reinstate site

Unit 6: Recording and reporting activities

- Argue workplace records
- Report completed work

Module Code and Title	AGR IRD1 M11 0522 : Irrigation and Drainage Works
Nominal Duration:	46 Hours
Module Description: This module covers the knowledge, skills and attitude required to prepare materials, tools and equipment, undertake basic irrigation and drainage work.	
Training Outcomes	
At the end of the module the learner will be able to	
<ul style="list-style-type: none"> • Prepare materials, Tools and equipment • Undertake irrigation and drainage work • Handle materials and equipment • Completion of irrigation and drainage works 	
Module Contents:	
Unit one: Materials, Tools and equipment	
<ol style="list-style-type: none"> 1.1. Identification of materials, tools and equipment 1.2. Conduct checks on all materials, tools and equipment. 1.3. Loading and unloading materials 1.4. Personal Protective Equipment (PPE) 1.5. Gender sensitive irrigation and drainage work 1.6. Identification and report of <i>OHS hazards</i> 	
Unit two: Irrigation and drainage work	
<ol style="list-style-type: none"> 2.1 Sstandard operating procedures 2.2 Eenvironmentally friendly iirrigation and drainage work. 2.3 Interactions with other staff in professional manner. 2.4 Observing guideline and procedures. 	
Unit three: Handle materials and equipment's	
<ol style="list-style-type: none"> 3.1 . Safe work practices 3.2. Instructions and organization guidelines 3.3 Clean and safe work site 	
Unit four: Completion of irrigation and drainage works	
<ol style="list-style-type: none"> 4.1 . Clean up tools and equipment 4.2 . Maintenance, storage of tools and equipment 4.3 . Repair and maintenance of irrigation components 4.4 Safe environmental practices. 4.5 .Report work outcomes 	

Learning Methods:

- Lecture
- Demonstration
- Simulation
- Group discussion
- Field visit

Assessment Methods:

- Written test
- Oral questioning
- Practical demonstration
- Presentation
- Observation in prepared checklist
- Direct observed practice

Assessment Criteria:

Module Contents:

Unit 1: Materials, Tools and equipment

- 1.1 Identification of materials, tools and equipment
- 1.2 Conduct checks on all materials, tools and equipment.
- 1.3 Loading and unloading materials
- 1.4 Personal Protective Equipment (PPE)
- 1.5 Gender sensitive irrigation and drainage work
- 1.6 Identification and report of *OHS hazards*

Unit 2: Irrigation and drainage work

- 2.1 Standard operating procedures
- 2.2 Environmentally friendly irrigation and drainage work.
- 2.3 Interactions with other staff in professional manner.
- 2.4 Observing guideline and procedures.

Unit three: Handle materials and equipment

- 3.1 Safe work practices
- 3.2 Instructions and organization guidelines
- 3.3 Clean and safe work site

Unit four: Completion of irrigation and drainage works

- 4.1 Clean up tools and equipment
- 4.2 Maintenance , storage of tools and equipment
- 4.3 Repair and maintenance of irrigation components
- 4.4 Safe environmental practices.
- 4.5 .Report work outcomes

Module Code and Title	AGR IRD1 M12 0522 : Nursery for Irrigation Work
Nominal Duration:	50 Hours
<p>Module Description: This module requires the ability to prepare materials, tools and equipment for irrigated nursery work, Support undertaking nursery work activities, store and stockpile materials, and clean up on completion of work. Supporting nursery work requires knowledge of safe work practices, nursery hygiene and quality control, nursery plant maintenance activities, basic stock control procedures and propagation techniques.</p>	
<p>Training Outcomes</p> <p>At the end of the module the trainee will be able to</p> <ul style="list-style-type: none"> • Prepare materials, tools and equipment • Start nursery work • Store and stockpile materials • Completion of nursery work 	
<p>Module Contents:</p> <p>Unit one: Materials, tools and equipment for nursery work</p> <p>1.1 Identify materials, tools and equipment</p> <p>1.2 Techniques for loading and unloading materials</p> <p>1.3 Select suitable personal protective equipment</p> <p>Unit two: Nursery work</p> <p>2.1 Procedures of nursery work</p> <p>2.2 Nursery work</p> <p style="padding-left: 20px;">2.2.1 Identify water source</p> <p style="padding-left: 20px;">2.2.2 Site selection</p> <p style="padding-left: 20px;">2.2.3 Site clearing</p> <p style="padding-left: 20px;">2.2.4 prepare lay out and leveling</p> <p>2.3 Propagation techniques</p> <p>2.4 Nursery hygiene and quality control</p> <p>2.5 Report problems</p> <p>Unit Three: Stockpile materials</p> <p>3.1. Plant debris and waste materials</p> <p>3.2. Removal surplus materials</p> <p>3.3. Clean and safe work site.</p>	

Unit Four: Completion of nursery work

- 4.1 Store plants and materials
- 4.2. Clean, maintain tools and equipment.
- 4.3. Report work outcomes

Learning Methods:

- Lecture
- Group discussion
- Demonstration
- Case study
- Field visit
- Brainstorming

Assessment Methods:

- Written test
- Oral questioning
- Practical demonstration
- Presentation
- Project work vs Product evaluation
- Observation in prepared checklist
- Direct observed practice

3 Resource Requirements

Item No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
A.	Learning Materials			
1.	TTLM	TTLM prepared by the trainer	25	1:1
2	Reference Books	(Author, year, editions and publisher)		
2.1	Irrigation and drainage engineering	D. Lenka, 3 rd revised edition, 2005	13	1:2
2.2	Irrigation engineering and hydraulic structures	S.K Garg, 19 th revised edition, 2005	5	1:5
2.3	Small scale irrigation, Water harvesting	Chinese instructor team Archana Mishra, 1 st edition, 2006	5	1:5
2.4	Practical nursery Production	Saini/Kaushik/ Godera, reserved in 2001	5	1:5
	basic surveying	W.Whyte. R.Paw 4 th edition	5	1:5
2.5	Manual on soil, plant and water analysis	Dhyan singh P.K Chonkar B.S Dwived	5	1:5
2.6	Irrigation and drainage	FAO paper, No 24&56	5	1:5
2.7	Design guide line on drainage System	Design guide line on drainage system, July, 2002		
2.8	Agricultural Extension	H.S.Hawkins, second Edition	5	1:5
2.9	Surveying	Arthur Bannister, Stanley Raymond, Raymond Baker, 1988, 7 th edition	5	1:5
2.10	Fundamental of surveying.	S.K.Roy, 2003,	5	1:5
2.11	Drip irrigation	S.Dasberg, 999,	5	1:5
2.12	Advances and Challenges with Micro-Irrigation	Chandra A. M. and J. Morrison, 2013	13	1:2
4.	Journals/Publication/Magazines			
B.	Learning Facilities & Infrastructure			
1.	Lecture Room	8*7m	1	1:25
2.	Library	37*13m	1	1:25

3.	Laboratory	12*10m	1	1:25
4.	Store	10*8m	1	1:25
5.	Practical site	100*50 m	1	1:25
C. Consumable Materials				
1.	Paper	A4	600 pcs	24:1
2.	Flip chart	Standard	12 pcs	1:2
3.	Pen	Ballpoint pen	50 pcs	2:1
4.	Fixer with lead	Standard	25 pcs	1:1
5.	Marker	Whit bored marker	2000 pcs	3:1
6.	Black board	Standard (3m*1.2)	1	1:25
7.	White board	Standard (3m*1.2)	1	1:25
8.	Drawing equipment's	Standard	25 Set	1:1
9	Flash disc	4 TB	5 pcs	1:5
10.	Chalk	Standard	1 pack	1:25
D. Tools and Equipment's				
1.	Leveling equipment	Standard	5 pcs	1:5
2	Polyvinyl chloride (PVC)	(50,75,110,400) mm diameter	5 pcs	1:5
3	Polyethylene	1/2,3/4,1,2inch,2 00inch	5 pcs	1:5
3	Cast iron	Standard	1 pcs	1:25
4	Jointing systems for pipe types	Union, socket, cross-t, reducer	1 pcs	1:25
5	Cement	C-25(1:2:3)	1bag	1:25
6	Sand	sild content<7	1M ₃	1:25
7	Aggregate	0.2cm,0.1cm	11M ₃	1:25
8	Reinforcement	(6,8,10,12,- 32)mm diameter	5 pcs	1:5
9	Bar	6	1kg	1:25
10	Timber	3cm - 5cm	1M	1:25
11	Nails	3cm-15cm	1Kg	1:25
12	black wire	1.5mm wire	1 pcs	1:25
13	Bitumen	Standard	1:25	
14	construction joints(expansion or shupud)	8mm stire foam	1 pcs	1:25
15	Water stop	Meter	2 pcs	1:1
16	Steel/plastic Tape	50m/100m/200m	5pcs	1:5
17	Hand Levels	Standard	5pcs	1:5
18	Engineer's Transit	Standard	4pcs	1:25/4
19	Electronic Surveying Systems	Standard	1pcs	1:25
20	The electronic or manual theodolite	Standard	2set	1:25/2
21	Tripod	Standard	2set	1:25/2

22	Staff/ Reading rod	Standard	5 pcs	1:5
23	Range pole	Standard	5 pcs	1:5
24	Wheelbarrow	Standard	5 pcs	1:5
25	String lines	Standard	5 pcs	1:5
26	Tape measures	200m	5 pcs	1:5
27	Mowers	Standard	5 pcs	1:5
28	Brush cutters	Standard	5 pcs	1:5
29	Pumps	20HP diesel,	1no	1:25
30	Air compressors	Standard	1 pcs	1:25
31	Generators	Standard	1 no	1:25
32	Spades	Standard	5 pcs	1:5
33	Shovels	Standard	5 pcs	1:5
34	Forks	Standard	5 pcs	1:5
35	Sprinkler	Standard	1 set	1:25
36	Drip	Standard	1 set	1:25
37	Triddle pump	Standard	1 set	1:25
38	Rope and washer pump	Standard	1 set	1:25
39	Solar pump	Standard	1 set	1:25
40	Wind mill pump	Standard	1 set	1:25
41	Bucket,	Standard	5 pcs	1:5
42	Dynamo or electric pump	Standard	1 set	1:25
43	Infiltrimeter	Standard	5 pcs	1:5
44	Water measuring device	Standard	5 pcs	1:5
45	Parshall flume	Standard	1	1:25
46	Inverted siphon	Standard	1	1:25
47	Farm machinery	Standard	1 set	1:25
48	Pulley	Chain block(1-20 tons	1	1:25
49	Intake gate	knife gate valve	1	1:25
50	Hydraulic operated gate	Iron gate	1	1:25
51	Sprayer	Capacity 16 L, working pressure 2bar	1	1:25
52	Water can	HP- 2509	1	1:25
53	Diffuse light house storage (DLHS)	Standard	1	1:25
54	Crow bars	Standard	5 pcs	1:5
55	Brooms	Standard	5 pcs	1:5
56	Sanding blocks	Standard	5 pcs	1:5
57	Hacksaws	Standard	5 pcs	1:5
58	line level	Standard	5 pcs	1:5

59	chaining pins	Standard	5 pcs	1:5
60	ranging pole	Standard	12 no	1:2
61	Staff	Standard	12 no	1:2
62	Clinometers	Standard	5 no	1:5
63	Global positioning system	Standard	5 no	1:5
64	Compass	Standard	5 no	1:5
65	Auger	Standard	5 no	1:5
66	core sampler	Standard	5 no	1:5
67	Spatula	Standard	5 no	1:5
68	Oven	Standard	5 no	1:5
69	pressure apparatus	Standard	5 no	1:5
70	sensitive balance	Standard	5 no	1:5
71	Sieve	Standard	5 no	1:5
72	soil grinder	Standard	5 no	1:5
73	hydro meter	Standard	5 no	1:5
74	shaker	Standard	5 no	1:5
75	measuring cylinder	Standard	5 no	1:5
76	Thermometer	Standard	5 no	1:5
77	stop watch	Standard	5 no	1:5
78	Flasks	Standard	5 no	1:5
79	plumb bob	Standard	5 no	1:5
80	Hoe	Standard	5 no	1:5
81	tracing paper	Standard	5 pcs	1:5
82	Pencil	Standard	5 pcs	1:5
83	graph paper	Standard	5 pcs	1:5
84	Fixer	Standard	25 no	1:1
85	topographic map	Recent map	5 pcs	1:1
85	drawing compass set	Standard	5 pcs	1:5
E.	Personal Protective Equipment(PPE)			
1.	Steel capped boots/shoes	Standard	25 pcs	1:1
2.	Overalls	Standard	25 pcs	1:1
3.	Gloves	Standard	25 pcs	1:1
4.	Sun hat	Standard	25 pcs	1:1
5.	Sunscreen lotion	Standard	25 pcs	1:1
6.	Safety goggles	Standard	25 pcs	1:1
7.	Face mask	Standard	25 pcs	1:1
8.	Ear protectors	Standard	25 pcs	1:1

4 Developers profile

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