



**National Competency Standards for**  
**“Digging Operation/Technology”**  
**“Digger/Excavator Operator”**  
**Level-3**



**National Vocational and Technical Training Commission**  
**(NAVTTTC) Government of Pakistan**



# TABLE OF CONTENTS

S.No	TABLE OF CONTENTS	Pages
1.	Title of qualifications	1
2.	Introduction	3
3.	Purpose of the qualification	4
4.	Date of Validation	4
5.	Code of qualifications	5
6.	Entry Requirements	5
7.	Members of qualifications development committee	6
8.	Members of qualifications review and validation committee	7
9.	Summary of Competency Standards	8
<b>CORE COMPETENCIES</b>		
<b>CS1</b>	724DOT05A - Perform Pre-Digging Tasks	17
<b>CS2</b>	724DOT05B - Operate Digging Machine/Excavator	19
<b>CS3</b>	724DOT05C - Perform Digging/Excavation Operation	21
<b>CS4</b>	724DOT05D - Perform Basic Maintenance of digging equipment	23
<b>CS5</b>	724DOT05E - Perform Advance Technical Drawings	25
	COMPLETE LIST OF TOOLS AND EQUIPMENT	27
<b>Digital Skills</b>		
<b>CS1</b>	0212FID12A - Perform Basic Computer Operations	15
<b>Soft Skills</b>		
<b>CS1</b>	041700840 - Identify and Implement Workplace policies and Procedures	9
<b>CS2</b>	102200846 - Apply Work Health and Safety Practices (WHS)	11
<b>CS3</b>	001100852 - Communicate at Workplace	13



## INTRODUCTION

Digging Operation/Excavation is one of the booming industries of Pakistan. There is an increasing demand of Digger/Excavator Operator. Therefore, the skills are required to be inducted in the future generation. If an individual is planning to pursue a career in construction, this program will be helpful in targeting various industries including mechanical, electrical, automobile, hydraulics, etc. If an individual is planning to take up Digger/Excavator Operator, this course will help him/her weigh their choices better.

Keeping in view of the above the competency based national vocational qualifications have been developed by NAVTTC to train the unskilled human resource on the technical and entrepreneurial skills to be employed / self-employed and inevitably set sustainable impact on their lives by increase in their livelihood income.

Training Course is based on competency standards which are defined by the industry and the traditional role of a trainer changes and shifts towards the facilitation of training. A trainer encourages and assists trainees to learn for themselves. Trainees are likely to work in groups (pairs) and all doing something different. Some are doing practical tasks in the workshop, some writing, some not even in the classroom or workshop but in another part of the building using specialist equipment, working on computers doing research on the Internet or the library. As trainees learn at different pace they might well be at different stages in their learning, thus learning must be tailored to suit individual needs. The following facilitation methods (teaching strategies) are generally employed.



## PURPOSE OF THE QUALIFICATION

The purpose of the training is to provide skilled manpower to improve the existing construction industry. This will improve the quality in different industrial sectors by Assistant Digger Operator and the availability of skilled professionals will bring socio-economic benefits to all stakeholders. The specific objectives of developing these qualifications are as under:

- Improve the professional competence of Digger/Excavator Operator
- Capacitate the local community and trainers in modern CBT training, methodologies and processes as envisaged under NVQF
- Provide flexible pathways and progressions in the mining sector.
- Enable the trainees to perform their duties in efficient manner
- Establish a standardized and sustainable system of training Assistant Digger Operator in Pakistan

## DATE OF VALIDATION

This national vocational qualification (NVQ) has been validated by the Qualifications Development Committee (QDC) in 08<sup>th</sup> to 12<sup>th</sup> November, 2021 and will remain in currency until 20th Jan 2023/2024.

\*Shall be reviewed after 3 years



## CODE OF QUALIFICATION

Qualification Title	Code
National Vocational Certificate Level 3, in (Digging Operation Supervisor) "Digger/Excavator Operator"	724DOT05

## ENTRY REQUIREMENTS

- For National Vocational Certificate Level-3 in "Digger/Excavator Operator" (Digging Operation Supervisor), the entry requirement is award of National Vocational Certificate Level-2 in "Assistant Digger Operator".



## QUALIFICATIONS DEVELOPMENT COMMITTEE

The following members participated in the qualification development of these qualifications:

Sr. No.	Name	Designation	Organization
1.	Shahzad Ahmad	Director	SS&-C, NAVTTTC HQ
2.	Mehwish Aisha Ahsan	DACUM Facilitator	CBT Expert/Certified Assessor
3.	Muhammad Faraz Haider	Instructor, Mechanical	CTTI Islamabad
4.	Sikander Mehmood	Instructor, Mechanical	CTTI Islamabad
5.	Muhammad Rizwan Sarwar	Sr Instructor	GTTI Sheikhpura)
6.	Saif Ullah Khan	AD, Technical	PITAC, Lahore
7.	Sajid Mahmood	Site Incharge	National Construction Co, Lahore
8.	Engr. Abdul Basit Mansoor	AFM Civil	PITAC, Lahore
9.	Engr. Muhammad Ibrar	Manager Site,	DHA Bahawalpur
10.	Engr. Ameer Khusro	Site Supervisor,	Makson, Peshawar
11.	Engr. Rebab Maria Mehmood	Site Engineer	IMC Engineering & Consultants, Lahore
12.	Engr. Norheen Amina	Project Coordinator	Allied Engineering Services, Lahore
13.	Tahir Mahmood	GTTI Mughalpura	Lahore
14.	Dr Amjad Hussain	AP, Mechanical	UET, Lahore
15.	Dr Shahid Imran	HOD	Mechanical, UET, Lahore



## QUALIFICATIONS REVIEW AND VALIDATION COMMITTEE

The following members participated in the qualification development of these qualifications:

Sr. No.	Name	Designation	Organization
1.	Shahzad Ahmad	Director	SS&-C, NAVTTTC HQ
2.	Mehwish Aisha Ahsan	DACUM Facilitator	CBT Expert/Certified Assessor
3.	Aqsa Saleem	CBT Assessor	GCU, Faisalabad
4.	Mr Shahzad Zafar	Master Trainer/Ex DD	PTEVTA, Lahore
5.	Muhammad Younas	Master Trainer/Ex DD	Staff training College Lahore
6.	Engr. Muhammad Ibrar	Manager Site	DHA Bahawalpur
7.	Engr. Jamal Akbar	Associate Professor, Mechanical Department	GCT Peshawar
8.	Engr. Tashiq Semab Amin	Dy Manager,	HIT Taxila
9.	Mr. Tahir Shah	Assistant Secretary	TTB Peshawar
10.	Engr. Usama Ahmed	Assistant Track Engineer	Orange Line, Lahore
11.	Engr. Nohman Ahmad	Great Drilling Co	Iraq
12.	Syeda Fatima Iqbal	System Analyst	PBTE
13.	Israr Ahmed	Secretary	BTE, KPK
14.	Syed Mansoor Ahmed	Assistant Manager IT, NVQF Registry Incharge	SBTE Sindh
15.	Humaira Kanwal	Assistant Professor	University of Lahore, Lahore



## SUMMARY OF COMPETENCY STANDARDS

### National Vocational Certificate Level 3, in (Digging Operation Supervisor) “Digger/Excavator Operator” (6 Months)

Co de	Competency Standards	Level	Theory		Practical		Total	
			C	Hr.	C	Hr.	C	Hr.
1.	A-Identify and implement Workplace Policies and Procedures	3	1	10	1	10	2	20
2.	B-Apply work health and safety practices (WHS)	3	2	20	1	10	3	30
3.	C-Communicate at workplace	3	2	20	1	10	3	30
4.	D-Perform Basic Computer operations	2	2	20	3	30	5	50
5.	E-Perform Pre-digging tasks	3	1	10	4	40	5	50
6.	F-Operate Digging Machine/Excavator	3	2	20	9	90	11	110
7.	G-Perform Digging/Excavation Operation	3	4	40	10	100	14	140
8.	H-Perform Maintenance of digging equipment	3	2	20	5	50	7	70
9.	I-Perform Advance Technical Drawing	3	2	20	8	80	10	100
<b>Total</b>			18	180	42	420	60	600





## Competency Standard A: Identify and Implement Workplace policies and Procedures - 041700840

**Overview:** This unit describes the skills and knowledge required to develop and implement a workplace policy & procedures and to modify the policy to suit changed circumstances. It applies to individuals with managerial responsibilities who undertake work developing approaches to create, monitor and improve strategies and policies within workplaces and engage with a range of relevant stakeholders and specialists.

Competency Units	Performance Criteria
<b>CU1.</b> Identify workplace policy & procedures	<p><b>You must be able to:</b></p> <p><b>P1.</b> Identify the workplace policy &amp; procedures</p> <p><b>P2.</b> Apply appropriate strategies that can be used to measure whether your workplace health and safety obligations are being met.</p> <p><b>P3.</b> Assure the policies are realistic, resources and personnel to implement</p> <p><b>P4.</b> Implement the policy &amp; procedures that reflects the organizations commitments</p> <p><b>P5.</b> Ensure the appropriate methods of implementation, outcomes and performance indicators</p>
<b>CU2.</b> Implement workplace policy & procedures	<p><b>You must be able to:</b></p> <p><b>P1.</b> Apply and assign responsibility for recording systems to track continuous improvements in policy &amp; procedures</p> <p><b>P2.</b> Implement strategies for continuous improvement in effective and efficient information</p>
<b>CU3.</b> Communicate workplace policy & procedures	<p><b>You must be able to:</b></p> <p><b>P1.</b> Communicate procedures to help implement workplace policy</p> <p><b>P2.</b> Inform those involved in implementing the policy about expected outcomes, activities to be undertaken and assigned responsibilities</p>



<b>CU4.</b> Review the implementation of workplace policy & procedures	<b><i>You must be able to</i></b> <b>P1.</b> Identify the trends that may require remedial actions <b>P2.</b> Record the trends that may require remedial actions. <b>P3.</b> Ensure policy and procedures as required are made for continuous improvement of performance
--	--

## Knowledge & Understanding:

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- Legislation, regulations and codes of practice applicable to the organization
- internal and external sources of information and organizational policy & procedures
- Typical barriers to implementing policies and procedures in an organization.

## Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

1. Identify evidences of the ability to implement work place policy and procedures. Briefly identify work place procedures to avoid incident.



## Competency Standard B: Apply Work Health and Safety Practices (WHS) - 102200846

**Overview:** This unit describes the skills to work with safety and participate in hazard assessment activities, follow emergency procedures and participate in OHS practices in process.

Competency Units	Performance Criteria
<b>CU1.</b> Implement safe work practices at work place	<p><b><i>You must be able to</i></b></p> <p><b>P1.</b> Implement relevant rules and procedures of WHS at work place.</p> <p><b>P2.</b> Comply with duty of care requirements</p> <p><b>P3.</b> Use personal protective equipment according to safe work practices</p> <p><b>P4.</b> Contribute to WHS consultative activities</p> <p><b>P5.</b> Raise WHS issues with relevant personnel</p>
<b>CU2.</b> Participate in hazard assessment activities at a work place	<p><b><i>You must be able to</i></b></p> <p><b>P1.</b> Identify hazards or WHS issues in the workplace to relevant personnel</p> <p><b>P2.</b> Assess and control risks according to own level of responsibility, in line with workplace procedures</p> <p><b>P3.</b> Report hazards or WHS issues in the workplace to relevant personnel</p> <p><b>P4.</b> Document risk control actions as required</p>
<b>CU3.</b> Follow emergency procedures at workplace	<p><b><i>You must be able to</i></b></p> <p><b>P1.</b> Report emergencies or incidents promptly to relevant personnel</p> <p><b>P2.</b> Deal with emergencies in line with own level of responsibility</p> <p><b>P3.</b> Implement evacuation procedures as required</p>
<b>CU4.</b> Participate in OHS consultative processes	<p><b><i>You must be able to</i></b></p> <p><b>P1.</b> Contribute to workplace meetings, inspections or other consultative activities</p>



	<p><b>P2.</b> Raise OHS (Occupational Health and Safety) issues with designated persons in accordance with organizational procedures</p> <p><b>P3.</b> Take actions to eliminate workplace hazards or to reduce risks</p>
--	---

## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- Outline the WHS rights and responsibilities that apply to own role
- Explain the term duty of care
- Describe typical health and safety roles in the workplace
- List and describe common safety signs and symbols
- Explain procedures for reporting hazards, risks, incidents and accidents
- Identify and describe common hazards and major causes of accidents relevant to the workplace
- Explain what the term risk control means
- List and describe potential emergency situations and how to respond to them

## Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

1. Demonstrate evidences of the Health and safety Processes to avoid any incident.



## Competency Standard C: Communicate at Workplace - 001100852

**Overview:** This unit describes the performance outcomes, skills and knowledge required to develop communication skills in the workplace. It covers gathering, conveying and receiving information, along with completing assigned written information under direct supervision.

Competency Units	Performance Criteria
<b>CU1.</b> Communicate within the organization	<p><b><i>You must be able to</i></b></p> <p><b>P1.</b> Communicate within a department</p> <p><b>P2.</b> Communicate with other departments.</p> <p><b>P3.</b> Use various media to communicate effectively</p> <p><b>P4.</b> Communicate orally and written</p>
<b>CU2.</b> Communicate outside the organization	<p><b><i>You must be able to</i></b></p> <p><b>P1.</b> Deal with vendors</p> <p><b>P2.</b> Deal with clients/customers</p> <p><b>P3.</b> Interact with other organisations</p> <p><b>P4.</b> Use various media to communicate effectively</p> <p><b>P5.</b> Work with people of different cultures / backgrounds</p>
<b>CU3.</b> Communicate effectively in work group	<p><b><i>You must be able to</i></b></p> <p><b>P1.</b> Assess the issues to provide relevant suggestion to group members</p> <p><b>P2.</b> Resolve the issues/ problems /conflicts within the group</p> <p><b>P3.</b> Arrange group working sessions to increase the level of participation in the group processes</p> <p><b>P4.</b> Communicate messages to group members clearly to ensure interpretation is valid</p> <p><b>P5.</b> Communicate style /manner to reflect professional standards/ awareness of appropriate cultural practices</p> <p><b>P6.</b> Act upon constructive feedback</p>
<b>CU4.</b> Communicate in writing	<p><b><i>You must be able to</i></b></p> <p><b>P1.</b> Identify relevant procedures for written information</p> <p><b>P2.</b> Use strategies to ensure correct communication in writing .i.e.</p>



	<ul style="list-style-type: none"><li>• correct composition</li><li>• clarity</li><li>• comprehensiveness</li><li>• accuracy</li><li>• appropriateness</li></ul> <p><b>P3.</b> Draft assigned written information for approval, ensuring it is written within designated timeframes</p> <p><b>P4.</b> Ensure written information meets required standards of style, format and detail</p> <p><b>P5.</b> Seek assistance / feedback to aid communication skills development</p>
--	--

## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Importance of intra and inter organizational communication
- Basics of business communication
- Defining Modes of communication
- Effective communication in work group
- Communicating through writing
- The importance of teamwork

## Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

1. In your current position, what types of written communication do you use most often?  
(List them all).



## Competency Standard D: Perform Basic Computer Operations - 0212FID12A

**Overview:** This competency standard will provide skills and knowledge related to basic computer hardware, software, applications and troubleshooting. You will be able to demonstrate your skills in operating a computer system and software such as MS Word, MS PowerPoint, MS Excel as well as installation and troubleshooting of operating system and software. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
<b>CU1.</b> Configure Computer System	<p><b><i>You must be able to:</i></b></p> <p><b>P1.</b> Connect computer components and peripherals as per requirement.</p> <p><b>P2.</b> Install Drivers and applications according to the software specification.</p> <p><b>P3.</b> Troubleshoot Applications to trace and fix faults in a specific application to bring it in a running condition.</p> <p><b>P4.</b> Follow health, safety and security procedures to ensure safe working environment.</p>
<b>CU2.</b> Create a Document using MS Word	<p><b><i>You must be able to:</i></b></p> <p><b>P1.</b> Compose a document as per the requirement.</p> <p><b>P2.</b> Format Word Document according to given requirements.</p> <p><b>P3.</b> Print Word Documents according to requirements.</p>
<b>CU3.</b> Preparer a Worksheet using MS Excel	<p><b><i>You must be able to:</i></b></p> <p><b>P1.</b> Develop a worksheet as per given data.</p> <p><b>P2.</b> Format the worksheet according to given criteria.</p> <p><b>P3.</b> Apply Formulas according to the requirement.</p> <p><b>P4.</b> Generate Charts/Graphs according to the given data.</p>
<b>CU4.</b> Prepare a presentation using MS PowerPoint	<p><b><i>You must be able to:</i></b></p> <p><b>P1.</b> Insert Slides with different Layouts according to requirements of presentation.</p> <p><b>P2.</b> Insert text, tables, images, etc. according to the requirement.</p> <p><b>P3.</b> Apply a set of effects to animate the slide according to requirement.</p> <p><b>P4.</b> Apply Slide Transitions on Slides according to requirement.</p> <p><b>P5.</b> Apply Sound Effects on Objects/text/images according to requirement.</p> <p><b>P6.</b> Present a presentation according to 7Cs of communication.</p>



## Knowledge & Understanding

This competency standard will provide knowledge related to:

- Operating systems
- Hardware and Software
- Troubleshooting
- Internet and E-mailing
- Hyperlink and referencing
- Printing
- Formulas
- Short Keys
- WPM (Word Per Minute)
- 7 Cs of communication

## Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

1. Install MS Office Application correctly
2. Prepare a formatted document using MS Word
3. Enter data into the respective columns and rows as per given instructions
4. Set page layouts and margins
5. Apply any slide transition on entire presentation.





## Competency Standard E: Perform Pre-Digging Tasks - 724DOT05A

**Overview:** This competency standard deal with learning the competencies needed to perform Pre-digging tasks. That includes Initial preparatory activities, preparing the worksite and checking readiness of equipment. Your underpinning knowledge will be sufficient to provide the basis for your work.

Competency Units	Performance Criteria
<b>CU1.</b> Perform Initial preparatory activities	<p><b>You must be able to:</b></p> <p><b>P1.</b> Interpret Work order/Requisition</p> <p><b>P2.</b> Interpret excavation drawing/sketch</p> <p><b>P3.</b> Plan task sequences for optimum efficiency</p> <p><b>P4.</b> Select PPEs according to the requirement</p> <p><b>P5.</b> Ensure the issuance of Permit To Work (PTW)</p>
<b>CU2.</b> Prepare the work site	<p><b>You must be able to:</b></p> <p><b>P1.</b> Barricade the work area to prevent unauthorised entrance</p> <p><b>P2.</b> Identify different types of Soils and rocks</p> <p><b>P3.</b> Identify hazards at worksite and suggest a mitigation plan</p>
<b>CU3.</b> Perform pre-checking of equipment	<p><b>You must be able to:</b></p> <p><b>P1.</b> Select machinery/equipment according to the work order</p> <p><b>P2.</b> Perform inspection of selected equipment according to the SOPs</p> <p><b>P3.</b> Ensure the availability of toolbox</p>

## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Technical drawings
- Work order



- Types of digging/excavation equipment
- Maintenance tools
- Inspection checklists
- Types of Soils and rocks
- Occupational Health, Safety and Environment (OHSE)

## Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

1. Perform inspection of digging equipment according to the given instructions
2. Identify types of soil and rocks
3. Prepare the list of potential hazards
4. Interpret technical drawing of excavation



## Competency Standard F: Operate Digging Machine/Excavator - 724DOT05B

**Overview:** This competency standard deal with learning the competencies needed to operate digging machine/excavator. That includes operating Crawler excavator and wheeled excavator. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
<b>CU1. Operate Crawler Excavator</b>	<p><b><i>You must be able to:</i></b></p> <p><b>P1.</b> Identify Crawler Excavator</p> <p><b>P2.</b> Identify components of Excavator</p> <p><b>P3.</b> Start and shut down the Crawler Excavator</p> <p><b>P4.</b> Use different components (Boom, arm, bucket, etc.) of Crawler Excavator</p> <p><b>P5.</b> Use different controls (Forward, reverse, etc.) of Crawler Excavator</p> <p><b>P6.</b> use control panel of Crawler Excavator</p> <p><b>P7.</b> Attach/detach different attachments (Buckets, Auger, Breaker, etc.) of Crawler Excavator</p> <p><b>P8.</b> Coordinate with the banksman</p> <p><b>P9.</b> Mobilise the excavator according to the given instructions</p>
<b>CU2. Operate Wheeled Excavator</b>	<p><b><i>You must be able to:</i></b></p> <p><b>P1.</b> Identify Wheeled Excavator</p> <p><b>P2.</b> Identify components of Excavator</p> <p><b>P3.</b> Start and shut down the Wheeled Excavator</p> <p><b>P4.</b> Use different components (Boom, arm, bucket, etc.) of Wheeled Excavator</p> <p><b>P5.</b> Use different controls (Forward, reverse, etc.) of Wheeled Excavator</p> <p><b>P6.</b> Use control panel of Wheeled Excavator</p> <p><b>P7.</b> Attach/detach different attachments (Buckets, Auger, Breaker, etc.) of Wheeled Excavator</p> <p><b>P8.</b> Coordinate with the banksman</p>



	<b>P9.</b> Mobilise the excavator according to the given instructions
--	---

## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Types of Excavations
- Types of Excavators
- Parts of Excavators
- Attachments of Excavators
- Functions of different parts of excavator
- Work equipment

## Critical Evidence(s) Required

The candidate needs to produce any or all of the following documents/evidences:

1. Label different parts of Crawler Excavator
2. Label different parts of Wheeled Excavator



## Competency Standard G: Perform Digging/Excavation Operation - 724DOT05C

**Overview:** This competency standard deal with learning the competencies needed to perform Digging/Excavation Operation. That includes preparatory activities, performing Digging and post digging activities. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
<b>CU1.</b> Perform preparatory activities	<p><b>You must be able to:</b></p> <p><b>P1.</b> Unload equipment/machinery to the site</p> <p><b>P2.</b> Perform visual inspection of the equipment after off loading</p> <p><b>P3.</b> Verify excavation drawing/sketch with actual site condition</p> <p><b>P4.</b> Select PPEs according to the requirement</p> <p><b>P5.</b> Interpret benchmarks</p>
<b>CU2.</b> Perform Digging/Excavation	<p><b>You must be able to:</b></p> <p><b>P1.</b> Fit appropriate attachment to the equipment according to the job requirement</p> <p><b>P2.</b> Move the equipment to the worksite</p> <p><b>P3.</b> Ensure the equipment is levelled</p> <p><b>P4.</b> Set the work equipment according to the job requirement</p> <p><b>P5.</b> Perform digging operations (digging, moving, dumping, etc.) at the worksite according to the given instructions</p> <p><b>P6.</b> Monitor equipment performance</p> <p><b>P7.</b> Coordinate activities with site team</p> <p><b>P8.</b> Submit the job completion report to the concern person</p>
<b>CU3.</b> Perform post digging/Excavation activities	<p><b>You must be able to:</b></p> <p><b>P1.</b> Clear the work area according to the SOPs</p> <p><b>P2.</b> Ensure the cleanliness of equipment off site according to the SOPs</p> <p><b>P3.</b> Inspect the equipment according to the SOPs</p> <p><b>P4.</b> Ensure the closure of Permit To Work (PTW)</p>



## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Technical drawings
- Types of Excavators & their usage
- Parts of excavator
- Different types of attachment used on excavator
- Machine parameter settings
- Benchmarking
- Sequence of operations to achieve the job requirements
- PPE's

## Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

1. Perform Digging and Dumping according to the requirement



## Competency Standard H: Perform Basic Maintenance of Digging Equipment - 724DOT05D

**Overview:** This competency standard deal with learning the competencies needed to perform advance milling operations. That includes set a milling machine for a job, work piece setting for milling operations and. It will also allow you to prepare a job/ Milling Operations as per drawing and inspect the job as per drawing. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
<b>CU1.</b> Perform pre-checking of machine/equipment	<p><b>You must be able to:</b></p> <p><b>P1.</b> Check out the working of Battery</p> <p><b>P2.</b> Check out the indicators</p> <p><b>P3.</b> Check Engine coolant level</p> <p><b>P4.</b> Check Fuel Level</p> <p><b>P5.</b> Check Engine Oil Level</p> <p><b>P6.</b> Check Hydraulic oil level</p> <p><b>P7.</b> Check belt tension of track chain</p> <p><b>P8.</b> Check Air pressure of tyres for wheeled vehicle</p> <p><b>P9.</b> Inspect Hydraulic Pipes</p>
<b>CU2.</b> Inspect machine/equipment for fault detection	<p><b>You must be able to:</b></p> <p><b>P1.</b> Test the current with Multimeter</p> <p><b>P2.</b> Identify different types of gauges</p> <p><b>P3.</b> Measure the Hydraulic Temperature using Thermistor Kit</p> <p><b>P4.</b> Measure the Hydraulic Pressure using Hydraulic Pressure Gauge</p> <p><b>P5.</b> Measure Compression using compression gauge</p> <p><b>P6.</b> Measure Vacuum Pressure using Vacuum gauge</p> <p><b>P7.</b> Find out engine R.P.M using Tachometer</p> <p><b>P8.</b> Prepare and submit Inspection report</p>
<b>CU3.</b> Perform Basic maintenance of machine/equipment	<p><b>You must be able to:</b></p> <p><b>P1.</b> Perform basic Preventive maintenance as per checklist</p> <p><b>P2.</b> Perform basic Corrective maintenance as per requirement</p>



	<b>P3.</b> Report the major faults and defects to the supervisor for further action
--	---

## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- PPE's.
- Types of maintenance.
- Hand tools.
- Pressure Gauges
- Multimeter
- Thermistor kit
- Electrically simulating faults
- Cleaning all battery cap vents
- Tightening all exhaust connections
- Tightening all electric connections
- Types of alternator windings
- Instrument panel gauges and meters
- Of circuit breakers
- Daily start up checks
- Weekly checks
- Measurement the insulation resistance of alternator

## Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

1. Capable to perform daily check-ups
2. Capable to perform 250 hour maintenance





## Competency Standard I: Perform Advance Technical Drawings - 724DOT05E

**Overview:** This competency standard deal with learning the competencies needed to create 2D and 3D drawings by using various tools and commands in computer. You can create and modify objects and drawings in CAD software to meet specific intentions according to job requirements. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
<b>CU1.</b> Explore types of dimensioning and symbols	<p><b>You must be able to:</b></p> <p><b>P1.</b> Draw different types of dimensions.</p> <p><b>P2.</b> Draw different technical drawing symbols (material, survey, etc.)</p> <p><b>P3.</b> Draw different types of survey symbols (canal, trenches, tunnel, etc.)</p>
<b>CU2.</b> Develop Building Drawings	<p><b>You must be able to:</b></p> <p><b>P1.</b> Draw different elements of building</p> <p><b>P2.</b> Draw layout plan of building</p> <p><b>P3.</b> Draw excavation/foundation plan</p> <p><b>P4.</b> Draw elevation of building</p> <p><b>P5.</b> Draw working drawing of building</p>
<b>CU3.</b> Draw Sections	<p><b>You must be able to:</b></p> <p><b>P1.</b> Draw sections of single storey building plan</p> <p><b>P2.</b> Draw section of roads</p> <p><b>P3.</b> Draw X sections of different types of foundations</p> <p><b>P4.</b> Draw sections of canals</p> <p><b>P5.</b> Draw sections of trenches</p> <p><b>P6.</b> Draw sections of tunnel</p>

## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding



required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- 2D CAD drawings
- Dimensioning techniques and drawing symbols
- Material and light control

### **Critical Evidence(s) Required**

The candidate needs to produce any or all of the following documents/evidences:

1. Portfolio
2. 2D Drawings with given project specification and measurements.
3. Make customized 3D models and generate different 2D/3D views on layout according to the requirement of given job.



## COMPLETE LIST OF TOOLS AND EQUIPMENT

SR#	Tools & Equipment	Quantity
1.	Computer Systems	26
2.	Scanner	1
3.	Printer	1
4.	Hardness Testers	1
5.	Universal testing machine(UTM)	1
6.	Impact Testing Machines	1
7.	Steel Rulers	10
8.	Tri Square	10
9.	Inside Vernier Caliper	10
10.	Odd leg Vernier Caliper	10
11.	Trammel Vernier Caliper	10
12.	Outside Vernier Caliper	10
13.	Vernier Depth gauge	5
14.	Vernier Bevel protractor	5
15.	Thread gauges	5
16.	Screw pitch gauges	5
17.	Fillet gauges	5
18.	Feeler gauges	5
19.	Vernier Height gauge	5
20.	Dial indicators with magnetic stand	5
21.	Vernier Micrometer	5



22.	Inside Micrometer	5
23.	Outside Micrometer	10
24.	Depth Micrometer	5
25.	Snap Gauge set	2
26.	Dial Bore Gauge	5
27.	Set of Adjustable Wrench	5
28.	Set of Spanners (Open end, Ring)	5 each
29.	Pipe wrench	2
30.	L-key sets	5
31.	Nose pliers	5
32.	Grip pliers	5
33.	Crawler Excavator	5
34.	Wheel Excavator	5
35.	Wrenches	5
36.	Pliers	5
37.	Screw driver (Positive and negative)	5
38.	Hammer	5
39.	Vice grip	5
40.	Grease gun	5 each
41.	Paint brush	10
42.	Steel brush	25
43.	Crawler Excavator	10
44.	Measuring tape	10



45.	High pressure washer	5
46.	Air compressor	5
47.	Rigid and articulated dump truck ( Off road )	5
48.	Dump truck ( On road )	10 set
49.	Hopper	10
50.	Conveyor	10
51.	Vernier caliper (out, inside)	5
52.	Torque gauge	5
53.	Steel rule	5
54.	Multi-meter	5
55.	Thermometers	5
56.	Spanner set	10 packs
57.	Socket set	1
58.	ST(special service Tool)	1
59.	Drilling Machines	1
60.	Location Determining Devices	1
61.	Digging slant determining devices	1
62.	Communication Devices	10
63.	Sample Boxes	10
64.	Exploration and Scanning Devices	2
65.	Drawing board	25
<b>PPEs</b>		
66.	Helmet	25



67.	Safety shoes	25
68.	Safety belt	25
69.	Cotton hand gloves	25
70.	Goggles	25
71.	Reflective jackets	25
72.	Safety Signs & Message boards	25
73.	Full body Harness	25
74.	Lanyard	25
75.	Anchorage	25
76.	Barricade tape	25
77.	Metal barricades	25
78.	Plastic cones	25
79.	Safety nets.	25
<b>MATERIALS/LUBRICANTS</b>		
80.	Engine oil	
81.	Gear oil	
82.	Hydraulic oil	
83.	Coolant	
84.	Grease	
85.	Nitrogen gas	
86.	Marking cloth	
87.	Spare parts	
88.	Machine parts	



<b>89.</b>	Boulders	
<b>90.</b>	Soil	
<b>91.</b>	Sand	
<b>92.</b>	Limestone	
<b>93.</b>	Debris	
<b>94.</b>	Coal	
<b>95.</b>	Landfill	
<b>96.</b>	Ore	
<b>97.</b>	Silt	