Jabatan Pembangunan Kemahiran
Kementerian Sumber Manusia, Malaysia

STANDARD KEMAHIRAN PEKERJAAN KEBANGSAAN
(*NATIONAL OCCUPATIONAL SKILLS STANDARD*)

F410-001-3:2019

BUILDING CONSTRUCTION OPERATION SUPERVISION
PENYELIAAN OPERASI PEMBINAAN BANGUNAN

LEVEL 3

Department of Skills Development (DSD)
Federal Government Administrative Centre
62530 PUTRAJAYA, MALAYSIA

NATIONAL OCCUPATIONAL SKILLS STANDARD

BUILDING CONSTRUCTION OPERATION SUPERVISION

PENYELIAAN OPERASI PEMBINAAN BANGUNAN

LEVEL 3

TABLE OF CONTENTS

Abbreviation

1.	CIDB	Construction Industry Development Board
2.	CoCU	Curriculum of Competency Unit
3.	CP	Competency Profile
4.	CPC	Competency Profile Chart
5.	CU	Competency Unit
6.	DO	Delivery Order
7.	DOSH	Department of Occupational Safety & Health
8.	DPM	Damp Proof Membrane
9.	DSD	Department of Skills Development
10.	HSE	Health, Safety & Environment
11.	JSA	Job Safety Analysis
12.	M&E	Mechanical & Electrical
13.	MSC	Malaysian Skills Certificate
14.	NCS	National Competency Standard
15.	NOSS	National Occupational Skills Standard
16.	NSDC	National Skills Development Council
17.	OAS	Occupational Area Structure
18.	OS	Occupational Structure
19.	OSHA	Occupational Safety And Health Act
20.	PBL	Problem Based Learning
21.	PDA	Pile Driving Analyser
22.	PTW	Permit to Work
23.	RFI	Request for Information
24.	SBT	Scenario Based Training
25.	SDC	Standard Development Committee
26.	SOP	Standard Operating Procedure
27.	STC	Standard Technical Committee

28. STEC Standard Technical Evaluation Committee
29. TEM Tools Equipment Material
30. PPE Personal Protection Equipment
31. BIM Building Information Modelling

Glossary

1.	Building Construction Tradesman	A tradesman or tradesperson refers to a worker who specializes in a particular occupation that requires work experience, on-the-job training, and often formal vocational education. Among the most common construction trades are those of carpenter, plasterer, ironworker, mason etc.
2.	Construction Personnel Card (CIDB)	An integrated program that involves the registration and accreditation of construction personnel to enhance safety levels at construction work sites.
3.	Expended metal	Refers to expended metal brickworks reinforcement.
4.	Pre-fabricated reinforcement mesh	Reinforcement in mesh shape that fabricated at factory (e.g. BRC).
5.	Roof trusses	A series of triangles - a stable geometric shape that is difficult to distort under load. Regardless of its overall size and shape, all the chords and webs of a truss will form triangles.

Acknowledgement

The Director General of DSD would like to extend his gratitude to the organisations and individuals who have been involved in developing this Standard including:

i. National Skills Development Council (NSDC)
ii. Standard Technical Committee (STC)
iii. Standard Technical Evaluation Committee (STEC)
iv. Standard Development Committee (SDC)
v. Facilitator
vi. Secretariat
vii. Construction Industrial Development Board (CIDB)

STANDARD PRACTICE

NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) FOR:

BUILDING CONSTRUCTION OPERATION SUPERVISION

LEVEL 3

1. Introduction

1.1 Occupation Overview

Construction industry has evolved and transformed from conventional method to Industrialised Building System (IBS). Initiative should be carried out to set the standards for skilled construction personnel. This initiative leads to develop highly skill construction personnel and provide opportunities for locals, thus reducing the reliance on low skilled labour.

The Eleventh Malaysia Plan (RMK11) 2016-2020, strategic shifts have been formulated to elevate the labour market efficiency. The aims are to; i) improve labour market legislation and information, ii) improve the productivity, wage structure and job quality, and iii) improve the effectiveness in managing low-skilled workers.

The derived demand construction industry, recorded a double digit average annual growth rate of 11.1% during the Tenth Malaysia Plan (RMK10), faster than the overall economy which grew by 6.3%. In 2018, the construction sector is forecasted to contribute 7.3% to the GDP supported by strong growth in civil engineering and non-residential subsectors (see Figure 1).

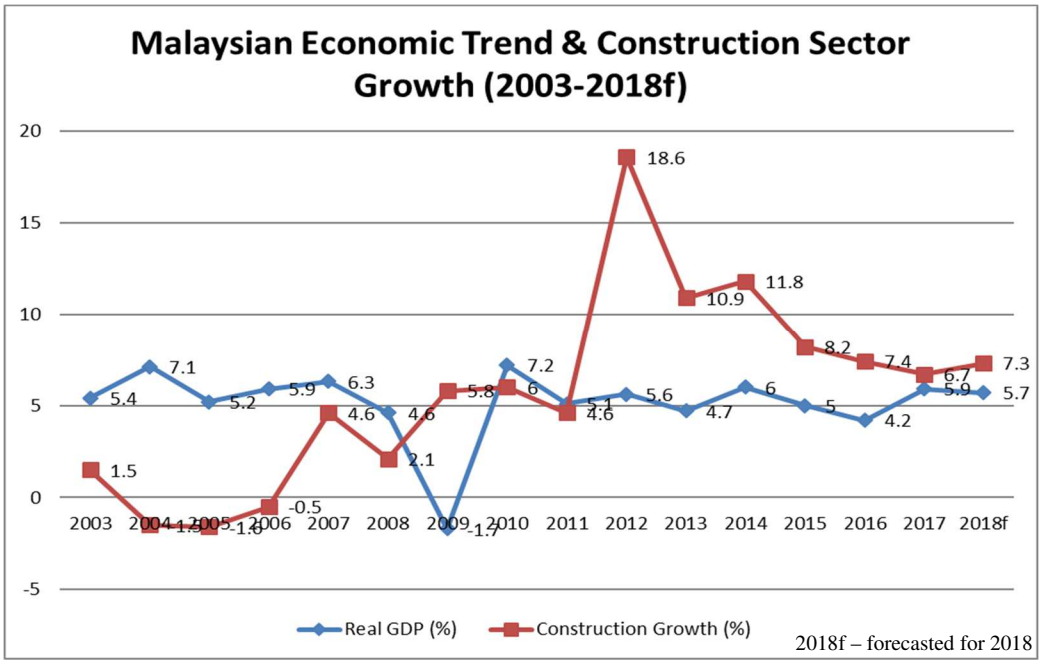


Figure 1: Malaysian Economic Trend & Construction Sector Growth (2003-2018f) (Bank Negara Malaysia, 2018)

For a period from 2015 to 2017, a total of 16,532 construction projects, valued at RM411.2 billion were awarded (CIDB, 2017). Private sector projects contributed RM223.5 billion, or 54.4% from the total value of the projects, while the remaining RM187.7 billion was contributed by public sector.

Apart, there are four categories of construction in Malaysia namely; residential, non-residential, social amenities, and infrastructure (see Table 1) (CIDB, 2011). They were representing a different kind of constructed facilities which has been clustered by their end usage. Construction activities being monitored closely by several government agencies such as Bank Negara Malaysia (BNM) and CIDB in order to measure the nation's economic stability and construction performances among others.

Table 1: Types of Construction in Malaysia according to Categories (CIDB, 2011)

No.	Categories	Construction Products
1	Residential	Quarters, terrace house, semi-detached house, bungalow, flat, condominium, apartment, townhouse, and dormitory.
2	Non-Residential	Shop houses, shop office, business complex, exhibition centre, petrol station, storehouse, warehouse, factory and industrial plant, workhop, and storage tank.
3	Social amenities	Hospital, clinic, medical laboratory, medical treatment centre, higher learning institution, school, education and training centre, and kindergarten.
4	Infrastructure	Reservoir, water pipeline, oil & gas pipeline, water tank, oil & gas tank, chemical tank, water treatment plant, airport, railway or train station, bus station, taxi station, harbour, jetty, road, highway, railway track, rail, traffic light, bridge and tunnel, and hangar.

There are five (5) levels of construction personnel namely, Building Construction Tradesman, Building Construction Foreman, Building Construction Supervisor, Building Construction Site Manager and Construction Project Manager.

Main responsibilities for Building Construction Supervisor are i) building construction supervision, ii) building work administration, iii) building work coordination, iv) building measuring work, v) piling monitoring, vi) building structure work inspection, vii) building architectural work inspection, and viii) building mechanical & electrical work verification. Therefore, the personnel able to qualify and competent in the building construction operation. This also will help them to be recognized globally.

1.2 Rationale of NOSS Development

This is a review of the NOSS entitled Building Constructor Level 1 & Level 2 (B-010-1 & B-010-2), Building Construction Supervisor Level 3 (B-010-3), Residential Building Construction Level 3 (BC-030-3:2013), Non-Residential Building Construction Level 2 (F410-001-2:2016) and Non-Residential Building Construction Site Supervision Level 3 (F410-001-2:2016). Previously, the NOSS for Building Constructor Level 1 until Level 3 was developed as an old NOSS format and it should have reviewed to follow the current format of NOSS development. Meanwhile for the NOSS residential and non-residential needs to harmonise and merge because of the similar work scope as a main competency after developing that two areas. All this NOSS also reviewed to anticipate

technology changes (e.g.: IBS system) in this industry as well as to replace the previous NOSS.

In the light of continuous economic development in the Building & Construction Industry, the demand for skilled personnel has increased thus the development programs for skilled manpower is timely. By going through the mechanism provided by the Skills Training system in Malaysia, one of the important steps is to develop this NOSS.

1.3 Rationale of Occupational Structure and Occupational Area Structure

Focus group discussions among practitioners discovered there are existing occupations from building construction pillar starting level 1 until level 3 classified under the Malaysia Standard Industry Classification (MSIC) in the section of construction (F), group of construction of buildings (410) and area of building construction. The job title identified is the common used from the operational that cover the building construction career path from lower level until the higher level which specified each job competencies which include knowledge, skills and attitude.

Based on the findings from the workhop, the main scope of work and responsibility generated by both occupations at level 1 and level 2 mostly similar from each other to become a holistic competency and differs at level 3 that have their own responsibility to archive that level. The competency of level 1 and 2 (Tradesman and Foreman) is to perform and implement building construction work covers all areas and trade. While for level 3 (Supervisor) is responsible to supervise, coordinate, administer and some elements of monitoring, inspection and verification during starting until completion of building construction work.

The Building Construction Operation Supervision level 3 personnel are consistent with the alignment of competency definition at level 3 recognised by Department of Skills Development (DSD) as the personnel needs to be competent in performing a broad range of varied work activities, performed in a variety of contexts, most of which are complex and non-routine. There is considerable responsibility and autonomy and control or guidance of others is often required.

1.4 Regulatory / Statutory Body Requirements Related to Occupation

i) Construction Industry Development Board (CIDB)
   - *Lembaga Pembangunan Industri Pembinaan Malaysia* Act 1994 (Act 520)

ii) Department of Safety & Health
   - OSHA 1994 (Act 514)
   - FMA 1967 (Act 139)

iii) Department of Environment
   - Environmental Quality Act 1974

iv) Local authorities (e.g. Local Council, TNB, BOMBA, IWK, etc.)
   - Town and Country Planning Act 1976 (Act 172)
   - Street, Drainage and Building Act 1974 (Act 133)
   - Uniform Building By-Laws 1984

1.5 Occupational Pre-Requisite

The minimum requirements for those interested to undertake the job or career in this area are as follows: -

i) CIDB's Construction Personnel Card *(Kad Pendaftaran Personel Binaan)*; and
ii) Physically fit.

1.6 General Training Pre-Requisite For Malaysian Skills Certification System

i) Malaysian Skills Certificate (MSC) Level 2 Building Construction Operation

2. Occupational Structure (OS)

Section	(F) Construction
Group	(410) Construction of Buildings
Area	Building Construction
Level 5	Construction Project Manager
Level 4	Building Construction Site Manager
Level 3	Building Construction Supervisor
Level 2	Building Construction Foreman
Level 1	Building Construction Tradesman

Figure 2: Occupational Structure

3. Occupational Area Structure (OAS)

Section	(F) Construction
Group	(410) Construction of Buildings
Area	Building Construction
Level 5	Construction Project Management
Level 4	Building Construction Site Management
Level 3	Building Construction Operation Supervision
Level 2	Building Construction Operation
Level 1	Embedded to L2

Figure 3: Occupational Area Structure

4. Definition of Competency Levels

The NOSS is developed for various occupational areas. Below is a guideline of each NOSS Level as defined by the Department of Skills Development, Ministry of Human Resources, Malaysia.

Level 1: Competent in performing a range of varied work activities, most of which are routine and predictable.

Level 2: Competent in performing a significant range of varied work activities, performed in a variety of contexts. Some of the activities are non-routine and required individual responsibility and autonomy.

Level 3: Competent in performing a broad range of varied work activities, performed in a variety of contexts, most of which are complex and non-routine. There is considerable responsibility and autonomy and control or guidance of others is often required.

Level 4: Competent in performing a broad range of complex technical or professional work activities performed in a wide variety of contexts and with a substantial degree of personal responsibility and autonomy. Responsibility for the work of others and allocation of resources is often present.

Level 5: Competent in applying a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts. Very substantial personal autonomy and often significant responsibility for the work of others and for the allocation of substantial resources features strongly, as do personal accountabilities for analysis, diagnosis, planning, execution and evaluation.

5. Award of Certificate

The Director General may award, to any person upon conforming to the Standards the following skills qualifications as stipulated under the National Skills Development Act 2006 (Act 652):

5.1 Malaysian Skills Certificate (MSC)
5.2 Statements of Achievement

6. Occupational Competencies

The Building Construction Operation Supervision Level 3 personnel is competent in performing the following core competencies:

6.1 Building Construction Supervision
6.2 Building Work Administration
6.3 Building Work Coordination
6.4 Building Measuring Work
6.5 Piling Monitoring
6.6 Building Structure Work Inspection
6.7 Building Architectural Work Inspection
6.8 Mechanical & Electrical Work Verification

7. Work Conditions

Generally, the personnel work in normal working hours depending on organisation nature of business. They may require working extra hours to fulfil internal and external requirements. They also may be needed to work in shift to accommodate work requirements. All personnel need to have valid CIDB's Construction Personnel Card and use/ wear appropriate attire (Personal Protective Equipment) during the commencement of their jobs. They may work individually or in group in a hazardous and unpredictable working environment. They must physical fit due to nature of job in building construction.

8. Employment Prospects

There is excellent prospect in private sectors due to shortage of hands-on expert in Building Construction Operation. In public sector there are lacking of professional and well experience Building Construction Operation. This area has a very good job market potential abroad for skilled personnel due to shortage of such highly skilled personnel in this region.

Other related occupations with respect to employment opportunities are:

8.1 Building Construction Supplier/ Distributor
8.2 Building Construction Instructor/ Trainer
8.3 Building Construction Consultant

Other related industries with respect to employment opportunities are:

8.4 Entrepreneurship
8.5 Education
8.6 Consultation

9. Up Skilling Opportunities

The person who has completed in Building Construction Operation competencies may proceed further training for up skilling opportunities to improve their skills, knowledge, career path and professional recognition.

9.1 Training for advancement

i) Building Operation Maintenance
ii) Construction Safety & Health
iii) Leadership
iv) Working at Height
v) Confine Space
vi) QLASSIC Awareness
vii) Scaffolding
viii) Machine Operator
ix) Permit to Work (PTW)

9.2 Industrial Recognition

i) CIDB recognition with specific competency unit / job scope

10. Organisation Reference for Sources of Additional Information

The following organisations can be referred as sources of additional information which can assist in defining the document's contents.

10.1 Public Work Department
Menara Kerja Raya (Block G),
Ibu Pejabat JKR,
Jalan Sultan Salahuddin,
50580 Kuala Lumpur
Tel : 03 – 8000 8000
Website : www.jkr.gov.my
E-mail : komunikasi@jkr.gov.my

10.2 Department of Occupational Safety and Health (DOSH)
Ministry of Human Resource
Level 5, Block D4, Complex D,
Federal Government Administrative Centre,
62530 Putrajaya
Tel : 03-8886 5343
Fax : 03-8889 2443
Website : www.dosh.gov.my

10.3 Construction Industry Development Board (CIDB)
Level 10, Menara Dato Onn,
Pusat Dagangan Dunia Putra,
No 45, Jalan Tun Ismail, 50480 Kuala Lumpur
Tel : 03 – 4047 7000
Website : www.cidb.gov.my
E-mail : info@cidb.gov.my

10.4 Master Builders Association Malaysia (MBAM)
No. 2, Jalan 2/109E, Desa Business Park,
58100 Kuala Lumpur,
Malaysia
Tel : 03-7984 8636
Fax : 03-7982 6811
Website : mbam.org.my

10.5 *Bahagian Pembangunan Kontraktor & Usahawan* (BPKU)
c/o Ministry of Entrepreneur Development
Level 5, Menara Block, Menara Usahawan,
No 18, Persiaran Perdana, Precinct 2,
62652 Putrajaya
Tel : 03-8880 5202
Fax : 03-8880 5204

10.6 *Persatuan Pemerkasaan Pembangunan Kemahiran & Kompetensi Malaysia* (PPPKKM) (PPM-031-10-19052016)
No. 14-2, Jalan Matahari U5/AB, Section U5,
40150 Bandar Pinggiran Subang,
Selangor
Tel : 03-5886 2105
E-mail : kompetensimalaysia@gmail.com

10.7 Department of Environment (DOE)
Ministry of Energy, Technology, Science, Environment & Climate Change
Level 1-4, Podium 2 & 3,
Wisma Sumber Asli,
No. 25, Persiaran Perdana, Precinct 4,
62574 Putrajaya
Tel : 03-8871 2000
Fax : 03-8888 9987
Website : www.doe.gov.my

10.8 SIRIM Berhad
No.1, Persiaran Dato' Menteri,
Section 2,
P.O.Box 7035,
40700 Shah Alam
Tel : 03-5544 6400
Fax : 03-5544 6694
Website : www.sirim.my

10.9 Malaysia Productivity Corporation (MPC)
Lorong Produktiviti, Jalan Sultan,
46200 Petaling Jaya,
Selangor
Tel : 03-7955 7266
Fax : 03-7957 8068
Website : www.mpc.gov.my

11. Standard Technical Evaluation Committee

NO	NAME	POSITION & ORGANISATION
1.	Ir. Dr. Mohd Fairuz Ab Rahman	Factory & Machinery Examiner Building Construction Safety Division Department of Occupational Safety and Health
2.	Noor Azian Hashim	Manager Unit of Training Infrastructure Development Skills Competency Development Division CIDB Malaysia
3.	Datuk Ir Hj Wan Nazri bin Hj Wan Aria	Chief Executive Officer Civil & Structural Consulting Engineers Gruppe Consultant
4.	Mohamad Zulkurnain Bin Abdul Rahman	Project Director Engineering Construction & Environment MRCB Builders Sdn Bhd

12. Standard Development Committee

BUILDING CONSTRUCTION OPERATION SUPERVISION

LEVEL 3

NO	NAME	POSITION & ORGANISATION
1.	Dr. Hairuddin Mohammad	Lecturer/ Researcher Center for Diploma Studies (CeDS) Department of Civil Engineering Universiti Tun Hussein Onn Malaysia (UTHM)
2.	Ahmad Nazrul bin Ahmad Kamal	Engineer Construction Technology Sector IBS Division CIDB Malaysia
3.	Mohd Dhiya Hafreez bin Kamil	Construction Manager Dasacon Sdn Bhd
4.	Mohd Syarafi Rohseli	Manager HPR Constructor Malaysia Sdn Bhd
5.	Razali Ahmed Zaman	Project Manager Proven Construction & Development Sdn Bhd
6.	Sazali bin Ismail	Senior Manager MRCB
7.	Badrol Hisham bin Zainordin	Lecturer Civil Department IKTBN Bachok
8.	Ridzal Shah bin Radzuan	Lecturer Civil Department Giatmara Malaysia
9.	Wan Nurul Huda binti Wan Yusof	Lecturer Civil Department ILP Kota Bharu
10.	Faradiva binti Zainal	Executive Director Budi Prisma Sdn Bhd
11.	Dr. Siva A/L Rabindarang	Head Department Civil Engineering Technology Vocational College Slim River
12.	Sahat bin Amin	Senior Project Manager MSR Consultant & Resources
FACILITATOR		
1.	Syazwani binti Azmi	Department of Skills Development (DSD)
2.	Jefrizain bin Abdul Rasid	Department of Skills Development (DSD)

STANDARD CONTENT

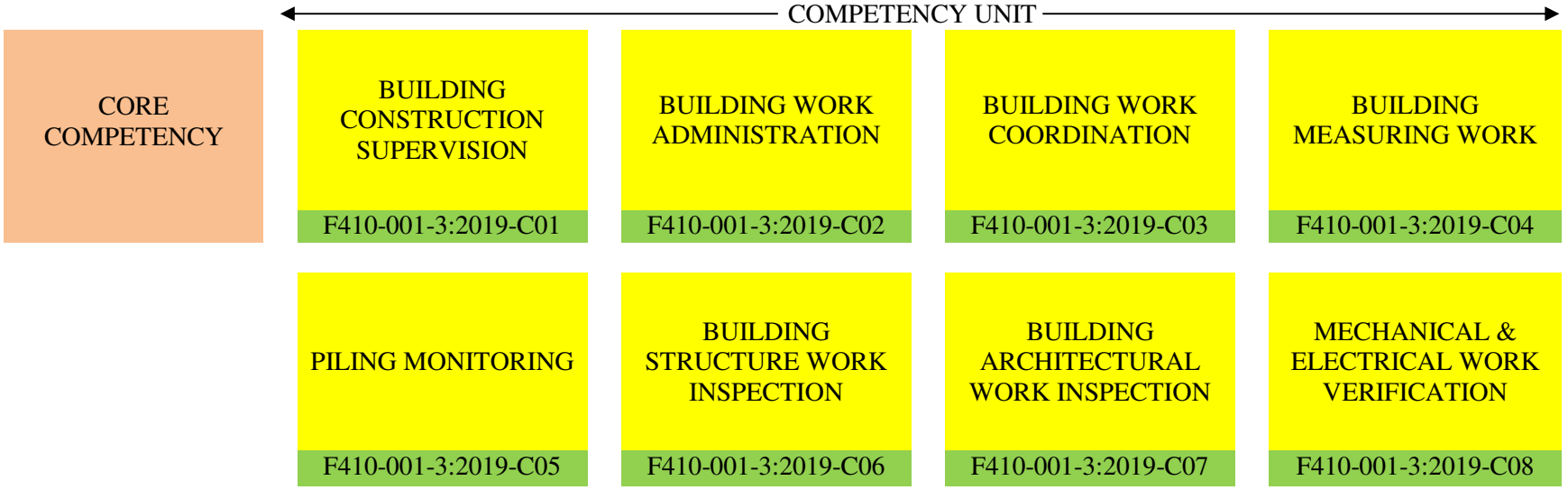
NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) FOR:

BUILDING CONSTRUCTION OPERATION SUPERVISION

LEVEL 3

13. Competency Profile Chart (CPC)

SECTION	(F) CONSTRUCTION		
GROUP	(410) CONSTRUCTION OF BUILDINGS		
AREA	BUILDING CONSTRUCTION		
NOSS TITLE	BUILDING CONSTRUCTION OPERATION SUPERVISION		
NOSS LEVEL	THREE (3)	NOSS CODE	F410-001-3:2019



14. Competency Profile (CP)

SECTION	(F) Construction		
GROUP	(410) Construction of Buildings		
AREA	Building Construction		
NOSS TITLE	Building Construction Operation Supervision		
NOSS LEVEL	Three (3)	NOSS CODE	F410-001-3:2019

CU TITLE & CU CODE	CU DESCRIPTOR	WORK ACTIVITIES	PERFORMANCE CRITERIA
1. Building Construction Supervision F410-001-3:2019-C01	Building Construction Supervision describes the responsibility for direct reports on progress and productivity in the organisation. Supervision often includes conducting basic management skills, organising teams, training new employees, employee performance management (such as setting goals, observing and giving feedback and addressing performance issues) and ensuring conformance to personnel policies and other internal regulations. A competent person in this CU shall be able to conduct briefing session, prepare operation budget, monitor staff performance, coordinate staff training, coordinate meeting session and supervise Health, Safety and Environment (HSE) practices.	1. Conduct briefing session	1.1 Building construction activities information obtained and interpreted 1.2 Types of staff briefing determined in accordance with safety requirements 1.3 Points to be briefed listed in accordance with work requirements 1.4 Attendance list checked and recorded 1.5 Staff briefing executed in accordance with work requirements 1.6 Information feedback from staff obtained and compiled 1.7 Building construction task delegated to staff in accordance with work requirements
		2. Prepare operation budget	2.1 Details of expense items for operation budget identified in accordance with contract document 2.2 Duration of budget identified in accordance with company requirements. 2.3 Format of budget determined in accordance with company requirements. 2.4 Operation budget proposed to superior in accordance with company procedures 2.5 Operation budget utilisation monitored and controlled in accordance with company SOP

CU TITLE & CU CODE	CU DESCRIPTOR	WORK ACTIVITIES	PERFORMANCE CRITERIA
	The outcome of this competency is to ensure all the elements of supervision carried out in accordance with company requirements.		2.6 Budget utilisation recorded and submitted to superior
		3. Monitor staff performance	3.1 Human resources guidelines and staff record identified 3.2 Staff attendance checked in accordance with company rules and regulation 3.3 Staff discipline checked in accordance with company rules and regulation 3.4 Staff knowledge and skill measured in accordance with staff duties and responsibilities 3.5 Staff appearance checked in accordance with company rules and regulation 3.6 Staff performance reviewed and submitted to superior for verification and as reference for staff development
		4. Coordinate staff training	4.1 Types and module of training determined in accordance with company requirements 4.2 Suitable training location determined in accordance with types of training 4.3 Numbers and level of participant identified 4.4 Staff training monitored 4.5 Training implementation report prepared and submitted to superior
		5. Coordinate meeting session	5.1 Types of meeting determined in accordance with work requirements 5.2 Members of meeting determined in accordance with meeting requirements 5.3 Procedure of meeting determined in accordance with company guidelines. 5.4 Meeting purpose, venue, date and time determined

CU TITLE & CU CODE	CU DESCRIPTOR	WORK ACTIVITIES	PERFORMANCE CRITERIA
			5.5 Meeting venue arranged in accordance with meeting requirements 5.6 Previous minutes of meeting distributed in accordance with SOP 5.7 Minutes of meeting taken and checked in accordance with meeting procedures
		6. Supervise Health, Safety and Environment (HSE) practices	6.1 Related HSE Act and authorities identified in accordance with OSHA requirements 6.2 Types of related form from authorities determined and filled up 6.3 Job Safety Analysis (JSA) implementation coordinated and deliver to staff 6.4 Types of PTW identified in accordance with work requirements 6.5 Permit to Work (PTW) applied from relevant parties (client / authorities) 6.6 HSE requirements information delivered to staff 6.7 HSE practices report (daily / weekly / monthly) prepared and submitted to superior
2. Building Work Administration F410-001-3:2019-C02	Building Work Administration describes the process of organising people, work requirements, resources, client and authorities during building construction period efficiently in the building project site. A competent person in this CU shall be able to prepare work schedule,	1. Prepare work schedule	1.1 Daily/weekly/monthly scope of work determined in accordance with work activities 1.2 Building construction completion period within timeline determined in accordance with contract document 1.3 Building construction resources requirements which include materials, tools, equipment's and manpower determined in accordance with work activities

CU TITLE & CU CODE	CU DESCRIPTOR	WORK ACTIVITIES	PERFORMANCE CRITERIA
	monitor work progress, coordinate progress claim, prepare progress report and handle authorities' requirements. The outcome of this competency is to ensure the administration of building project site organise and comply to the building contract in accordance with project requirements and specifications.		1.4 Building construction work schedule produced in accordance with work requirements
		2. Monitor work progress	2.1 Types of work / subcontractor activities determined in accordance with contract document and work schedule 2.2 Building construction work schedule identified in accordance with company SOP 2.3 Resources availability which materials, tools, equipment's and manpower checked in accordance with work schedule 2.4 Work progress checked in accordance with work schedule 2.5 Work quality checked in accordance with work specification with include quality of finishes and accurate of size and dimension 2.6 Recovery work plan for delayed work progress arranged 2.7 Site diary recorded, compiled and submitted to superior for verification
		3. Coordinate progress claim	3.1 Types of claim, types of work and work requirements identified for progress claim 3.2 Progress work which include quantity and quality of work checked in accordance with work specification and contract document 3.3 Progress claim checked and recommended to superior

CU TITLE & CU CODE	CU DESCRIPTOR	WORK ACTIVITIES	PERFORMANCE CRITERIA
		4. Prepare progress report	4.1 Building construction progress report format determined as per client's requirements 4.2 Building progress content determined in accordance with contract document 4.3 Accuracy of progress report data checked for compilation 4.4 Progress report data produced and submitted to superior within time line.
		5. Handle authorities' requirements	5.1 Types of authorities' documentation and requirements identified 5.2 Types of relevant authorities' parties identified in accordance with contract document 5.3 Required form filled up and others support documentation attached and submitted to superior 5.4 The submitted documentation follow up and work permit obtained for work execution
3. Building Work Coordination F410-001-3:2019-C03	Building Work Coordination describes the preliminary process in arranging site construction activities, synchronization and integration of building construction work involves consultants, sub-contractors and suppliers. A competent person in this CU shall be able to verify drawing & specification, coordinate material preparation, coordinate site machinery, coordinate	1. Verify drawing & specification	1.1 Types of drawing requirements and specifications obtained from superior and interpreted in accordance with contract document. 1.2 Discrepancy and conflict of drawings in contract document checked and resolved with professional engineer. 1.3 Verified drawing and specification status updated.
		2. Coordinate material preparation	2.1 Types of drawing requirements and specifications interpreted 2.2 Types, quantity/unit of material identified in accordance with work requirements. 2.3 Storage locations of materials identified

CU TITLE & CU CODE	CU DESCRIPTOR	WORK ACTIVITIES	PERFORMANCE CRITERIA
	manpower arrangement, coordinate site preparation and coordinate interfacing arrangement. The outcome of this competency is to ensure arranging preliminary building construction process in sequence in accordance with work activities.		in accordance with types of materials. 2.4 The quantity of materials requested using request form (purchase request) to superior. 2.5 Materials specification, quantity and condition checked in accordance with delivery order (DO). 2.6 Material status updated and submitted to superior.
		3. Coordinate site machinery	3.1 Types of drawing requirements and specifications interpreted 3.2 Types, quantity/unit of machinery and involves authorities identified in accordance with work requirements. 3.3 The quantity of machinery requested using machinery request form to superior. 3.4 Machinery specification, quantity and condition checked in accordance with machinery checklist 3.5 Machinery status updated and submitted to superior.
		4. Coordinate manpower arrangement	4.1 Relevant trades, work schedule, work location, and quantity of manpower identified in accordance with work requirements. 4.2 Manpower attendance list updated in accordance with work requirements. 4.3 Manpower allocated in accordance with trades and quantity required. 4.4 Contingency plan executed based on situation and request.

CU TITLE & CU CODE	CU DESCRIPTOR	WORK ACTIVITIES	PERFORMANCE CRITERIA
		5. Coordinate site preparation	5.1 Types of drawing requirements and specifications interpreted 5.2 Site preparation requirements which include layout, types of temporary building and types of hoarding identified in accordance with drawing, specification and contract document 5.3 Site utilities such as water, electricity and telephone applied as per requested. 5.4 Site preparation work arranged in accordance with contract document. 5.5 Site preparation progress updated and submitted to superior.
		6. Coordinate interfacing arrangement	6.1 Types of drawing requirements and specifications interpreted in accordance with contract document. 6.2 Discrepancy of drawing identified. 6.3 Request for Information (RFI) prepared and submitted to superior in accordance with SOP. 6.4 RFI listing registered and recorded in accordance with SOP.
4. Building Measuring Work F410-001-3:2019-C04	Building Measuring Work describes the activities of measuring, marking, levelling and setting out before carried out building construction work. A competent person in this CU shall be able to perform site marking, perform site levelling and perform setting out. The outcome of this	1. Perform site marking	1.1 Types of drawing requirements and specifications obtained from superior and interpreted in accordance with contract document. 1.2 Location of site marking identified in accordance with drawings. 1.3 Marking tools identified in accordance with work location. 1.4 Site marking executed in accordance with work location and method of marking. 1.5 Alignment, visibility, dimension and squareness of marking checked.

CU TITLE & CU CODE	CU DESCRIPTOR	WORK ACTIVITIES	PERFORMANCE CRITERIA
	competency is to ensure the accuracy of marking dimension, flatness and squareness of building construction work.	2. Perform site levelling	2.1 Types of drawing requirements and specifications obtained from superior and interpreted in accordance with contract document. 2.2 Location of site levelling identified in accordance with drawings. 2.3 Levelling tools and equipment identified in accordance with work location. 2.4 Site levelling executed in accordance with work location and method of levelling. 2.5 Height dimension, flatness and gradient of levelling checked. 2.6 Site levelling record updated and submitted to superior.
		3. Perform setting out	3.1 Types of drawing requirements and specifications obtained from superior and interpreted in accordance with contract document. 3.2 Location of site setting out identified in accordance with drawings. 3.3 Setting out tools and equipment identified in accordance with work location. 3.4 Setting out executed in accordance with work location and method of setting out. 3.5 Squareness and dimension of setting out checked. 3.6 Setting out record updated and submitted to superior.

5. Piling Monitoring F410-001-3:2019-C05	Piling Monitoring describes the activities to check piling work for building construction which include driven and pile testing work during piling work in accordance with drawing, method of statement and specification A competent person in this CU shall be able to monitor driven / injection pile, monitor load test and monitor Pile Driving Analyser (PDA) The outcome of this competency is to ensure the piling work carried out in accordance to drawing and specification.	1. Monitor driven / injection pile	1.1 Types of drawing requirements, method of statement and specifications obtained from superior and interpreted in accordance with contract document. 1.2 Inspection tools determined based on work inspection 1.3 Pile materials, casting date and size checked in accordance to drawing, method of statement and specification 1.4 Pile point checked before driven/inject 1.5 Pile penetration, joint and set monitored and recorded 1.6 Piling record updated and submitted to superior
		2. Monitor load test	2.1 Types of drawing requirements and specifications obtained from superior and interpreted in accordance with contract document. 2.2 Load test point checked in accordance with consultant requirements 2.3 Load test process monitored in accordance with working load requirements 2.4 Load test reported updated and submitted to superior
		3. Monitor Pile Driving Analyser (PDA)	3.1 Types of drawing requirements and specifications obtained from superior and interpreted in accordance with contract document. 3.2 PDA test point checked in accordance with consultant requirements 3.3 PDA test process monitored in accordance with consultant requirements 3.4 PDA test reported updated and submitted to superior

6. Building Structure Work Inspection F410-001-3:2019-C06	Building Structure Work Inspection describes the competency in monitoring and inspection of formwork, reinforcement, concrete work, roof truss and prefab component during building construction. A competent person in this CU shall be able to inspect building formwork work, inspect reinforcement work, inspect concreting work, inspect roof truss work and inspect prefab structure work. The outcome of this competency is to ensure building structure work carried out accordingly to drawing and specification.	1. Inspect building formwork work	1.1 Types of drawing requirements, specifications and method of statement obtained from superior and interpreted in accordance with contract document. 1.2 Inspection tools determined based on work inspection. 1.3 Dimension of formwork inspected and confirmed in accordance with contract specification and structural construction drawing 1.4 Location / level of installed formwork inspected and confirmed in accordance with contract specification and structural construction drawing 1.5 Alignment (horizontal, vertical and slanting) of installed formwork inspected and confirmed in accordance with installation requirements 1.6 Stability of assembled and / or installed formwork's inspected and confirmed in accordance with formwork specification and installation requirements 1.7 Time frame of formwork preparation monitored as progress report and master work program 1.8 Inspection form prepared and submitted to superior in accordance with submission dateline
		2. Inspect reinforcement work	2.1 Types of drawing requirements, specifications and method of statement obtained from superior and interpreted in accordance with contract document. 2.2 Inspection tools determined based on work inspection. 2.3 Cleanliness (rust free) of reinforcement bar inspected and confirmed through

			visual checking 2.4 Dimension and tightness of fabricated reinforcement inspected and confirmed in accordance with contract specification and structural construction drawing 2.5 Location / level of installed fabricated reinforcement inspected and confirmed in accordance with contract specification and structural construction drawing 2.6 Alignment (horizontal, vertical and gap) of installed fabricated reinforcement inspected and confirmed in accordance with installation requirements 2.7 Adequacy of spacer and fastener inspected and confirmed in accordance with in accordance with installation requirements 2.8 Time frame of reinforcement preparation monitored as progress report and master work program 2.9 Inspection form prepared and submitted to superior in accordance with submission dateline
		3. Inspect concreting work	3.1 Types of drawing requirements, specifications and method of statement obtained from superior and interpreted in accordance with contract document. 3.2 Inspection tools determined based on work inspection. 3.3 Mixing ratio inspected and confirmed in accordance with contract specification and structural construction drawing 3.4 Conformance during slump test activities monitored in accordance with slump test requirements 3.5 Preparation of cube sampling monitored

			and arrangement of sampling coordinated in accordance with strength test requirements and contract specification 3.6 Coverage and levelness of poured concrete inspected and confirmed in accordance with contract specification and structural construction drawing 3.7 Compliance in concrete curing process monitored in accordance with concrete curing method 3.8 Cracked and concrete honey comb in a concrete work (if any) inspected and confirmed in accordance with accepted tolerance value 3.9 Time frame of concrete work monitored as progress report and master work program 3.10 Inspection form prepared and submitted to superior in accordance with submission dateline
		4. Inspect roof truss work	4.1 Types of drawing requirements, specifications and method of statement obtained from superior and interpreted in accordance with contract document. 4.2 Inspection tools determined based on work inspection. 4.3 Wall plate connection, truss orientation and truss station inspected in accordance with Standard Operating Procedure (SOP) 4.4 Truss straightening and position work inspected in accordance with Standard Operating Procedure (SOP) 4.5 Rafter installation work inspected in accordance with Standard Operating Procedure (SOP)

			4.6 Web/diagonal, top chord and bottom chord bracing work inspected in accordance with Standard Operating Procedure (SOP) 4.7 Batten placing marking and fixing work inspected in accordance with Standard Operating Procedure (SOP) 4.8 Inspection form prepared and submitted to superior in accordance with submission dateline.
		5. Inspect prefab structure work	5.1 Types of drawing requirements, specifications and method of statement obtained from superior and interpreted in accordance with contract document. 5.2 Inspection tools determined based on work inspection. 5.3 Steel column, steel beam, steel framing wall and steel floor joist installation inspected in accordance with work requirements 5.4 Precast concrete column, concrete beam, concrete slab, concrete wall panel and concrete staircase installation inspected in accordance with work requirements 5.5 Time frame of prefab structure work monitored. 5.6 Prefab structure work inspection form prepared.
7. Building Architectural Work Inspection F410-001-3:2019-C07	Building Architectural Work Inspection describes the competency in monitoring and inspection of architecture finishing work during building construction. A competent person in this CU	1. Inspect roof finishing	1.1 Types of drawing requirements, specifications and method of statement obtained from superior and interpreted in accordance with contract document. 1.2 Inspection tools determined based on work inspection. 1.3 Dimension and installation angle of roofing system inspected and confirmed

	shall be able to inspect roof finishing, inspect door & window work, inspect wall work, inspect wall finishing, inspect floor finishing and inspect ceiling finishing. The outcome of this competency is to ensure building architecture work carried out accordingly to drawing and specification.		in accordance with contract specification and roofing system shop drawing 1.4 Installed roofing system checked free from defect through visual checking 1.5 Time frame of roof system installation monitored as progress report and master work program 1.6 Inspection form prepared and submitted to superior in accordance with submission dateline
		2. Inspect door & window work	2.1 Types of drawing requirements, specifications and method of statement obtained from superior and interpreted in accordance with contract document. 2.2 Inspection tools determined based on work inspection. 2.3 Door and window frame squareness, verticality, strengthens and durability inspected and confirmed in accordance with frame specification 2.4 Door leaf and window louvres / glazing squareness, verticality, strengthens and durability inspected and confirmed in accordance with frame specification 2.5 Functionality of installed door and window checked through physical test 2.6 Installed door & window checked free from defect through visual checking 2.7 Time frame of door and window installation monitored as progress report and master work program 2.8 Inspection form prepared and submitted to superior in accordance with submission dateline

		3. Inspect wall work	3.1 Types of drawing requirements, specifications and method of statement obtained from superior and interpreted in accordance with contract document. 3.2 Inspection tools determined based on work inspection. 3.3 Squareness, verticality and alignment of constructed / installed wall checked in accordance with contract specification and construction / shop drawing 3.4 Time frame of wall work monitored as progress report and master work program 3.5 Wall work checked free from defect through visual checking 3.6 Inspection form prepared and submitted to superior in accordance with submission dateline
		4. Inspect wall finishing	4.1 Types of drawing requirements, specifications and method of statement obtained from superior and interpreted in accordance with contract document. 4.2 Inspection tools determined based on work inspection. 4.3 Squareness, Coverage area, thickness and evenness of plastering work inspected and confirmed in accordance with wall specification 4.4 Wall finishing work checked free from defect through inspection 4.5 Time frame of wall finishing work monitored as progress report and master work program 4.6 Inspection form prepared and submitted to superior in accordance with submission dateline

		5. Inspect floor finishing	5.1 Types of drawing requirements, specifications and method of statement obtained from superior and interpreted in accordance with contract document. 5.2 Inspection tools determined based on work inspection. 5.3 Squareness, Coverage area, thickness and flatness of rendering work inspected in accordance with floor specification 5.4 Floor finishing work checked free from defect through inspection 5.5 Time frame of floor finishing work monitored as progress report and master work program 5.6 Inspection form prepared and submitted to superior in accordance with submission dateline
		6. Inspect ceiling finishing	6.1 Types of drawing requirements, specifications and method of statement obtained from superior and interpreted in accordance with contract document. 6.2 Inspection tools determined based on work inspection. 6.3 Ceiling marking level inspected and confirmed in accordance with ceiling finishing requirements 6.4 Squareness, levelness and alignment of installed ceiling inspected and confirmed in accordance with contract specification and construction / shop drawing 6.5 Time frame of ceiling finishing monitored as progress report and master work program 6.6 Ceiling finishing work checked free from defect through inspection 6.7 Inspection form prepared and submitted

			in accordance with submission dateline
8. Mechanical & Electrical Work Verification F410-001-3:2019-C08	Mechanical & Electrical Work Verification describes the activities to check common M&E work for building construction which include plumbing, sanitary and electrical work during installation in accordance with shop drawing and specification A competent person in this CU shall be able to verify plumbing system, verify sanitary system and verify electrical work. The outcome of this competency is to ensure the installation and functionality of M&E work carried out in accordance to drawing and specification.	1. Verify plumbing system	1.1 Types of drawing requirements, specifications and method of statement obtained from superior and interpreted in accordance with contract document. 1.2 Inspection tools determined based on work inspection 1.3 Location, materials, and size of pipe checked in accordance to drawing, method of statement and specification 1.4 Plumbing system testing monitored and recorded 1.5 Plumbing system checked free from defect through inspection 1.6 Plumbing system verification form updated and submitted to superior
		2. Verify sanitary system	2.1 Types of drawing requirements, specifications and method of statement obtained from superior and interpreted in accordance with contract document. 2.2 Inspection tools determined based on work inspection 2.3 Location, materials, and size of sanitary pipe checked in accordance to drawing, method of statement and specification 2.4 Sanitary system testing monitored and recorded 2.5 Sanitary system checked free from defect through inspection 2.6 Sanitary system verification form updated and submitted to superior
		3. Verify electrical work	3.1 Types of drawing requirements, specifications and method of statement obtained from superior and interpreted in accordance with contract document. 3.2 Inspection tools and equipment

			determined based on work inspection 3.3 Location, materials, and size of conduit, cable and electrical fitting checked in accordance to drawing, method of statement and specification 3.4 Electrical system testing monitored and recorded 3.5 Electrical system checked free from defect through inspection 3.6 Electrical system verification form updated and submitted to superior

CURRICULUM OF COMPETENCY UNIT

NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) FOR:

BUILDING CONSTRUCTION OPERATION SUPERVISION

LEVEL 3

15. Curriculum of Competency Unit

15.1 Building Construction Supervision

SECTION	(F) Construction		
GROUP	(410) Construction of Buildings		
AREA	Building Construction		
NOSS TITLE	Building Construction Operation Supervision		
COMPETENCY UNIT TITLE	Building Construction Supervision		
LEARNING OUTCOMES	The outcome of this competency is to ensure all the elements of supervision carried out in accordance with company requirements. Upon completion of this competency unit, trainees shall be able to: 1. Conduct briefing session 2. Prepare operation budget 3. Monitor staff performance 4. Coordinate staff training 5. Coordinate meeting session 6. Supervise Health, Safety and Environment (HSE) practices		
TRAINING PRE-REQUISITE (SPECIFIC)	Not Available		
CU CODE	F410-001-3:2019-C01	NOSS LEVEL	Three (3)

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
1. Conduct briefing session	1.1 Building construction activities information • Work schedule • Material delivery • Inspection 1.2 Types of staff briefing • Toolbox briefing • Safety briefing 1.3 Briefing issue/topic • Safety • Previous production performance/result	1.1 Interpret building construction activities information 1.2 Determine types of briefing 1.3 Prepare staff briefing content 1.4 Execute staff briefing 1.5 Obtain feedback from staff 1.6 Delegate building construction task	ATTITUDE • Factual in briefing issue/topic • Firm in handling staff briefing SAFETY • Not Available ENVIRONMENT • Not Available	1.1 Building construction activities information determined and explained 1.2 Types of staff briefing listed and explained 1.3 Points to be briefed listed and explained 1.4 Staff briefing delivered 1.5 Information feedback from staff recorded and compiled 1.6 Building construction task distributed

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Problem encountered • Revised schedule • New planning • Staff feedback			
2. Prepare operation budget	2.1 Types of expense items • Material • Maintenance • Stationary • Training • Manpower • Overtime • Transport • Travel 2.2 Duration of budget • Daily • Weekly • Monthly 2.3 Budget planning standard format • Spreadsheet • Chart • Graph 2.4 Operation budget report format	2.1 Identify operation budget requirements 2.2 Identify duration of budget 2.3 Determine format of budget 2.4 Propose operation budget 2.5 Control operation budget 2.6 Prepare operation budget report	ATTITUDE • Resourceful in identifying unit/activity budget requirements • Meticulous and knowledgeable in preparing unit/activity budget SAFETY • Not Available ENVIRONMENT • Not Available	2.1 Details of expense items listed and explained 2.2 Duration and scope of budget identified and explained 2.3 Format of budget selected and described 2.4 Operation budget drafted and justified 2.5 Operational budget monitored 2.6 Operation budget report produced
3. Monitor staff performance	3.1 Human resources guidelines and staff record • Evaluation form • Disciplinary record • Customer feedback record	3.1 Identify human resources guidelines and staff record 3.2 Check staff attendance 3.3 Check staff discipline 3.4 Measure staff knowledge and skill 3.5 Review staff	ATTITUDE • Transparent and fair on evaluating staff SAFETY • Not Available	3.1 Human resources guidelines and staff record listed and explained 3.2 Staff attendance form verified 3.3 Staff discipline record verified and explained 3.4 Staff knowledge and skill interpreted and described

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Personal record 3.2 Staff discipline guidelines 3.3 Purpose of performance evaluation which includes: • Confirmation • Increment • Bonus • Promotion 3.4 Level of performance • BE (Below Expectation) • ME (Meet Expectation) • EE (Exceed Expectation) • OS (Outstanding Performance) 3.5 Future personnel development • Immediate improvement • Training • Cross exposure 3.6 Staff performance report	performance 3.6 Prepare staff performance report	<u>ENVIRONMENT</u> • Not Available	3.5 Staff performance evaluated and explained 3.6 Staff performance report produced
4. Coordinate staff training	4.1 Training Needs Analysis (TNA) process 4.2 Training requirements • Training programme (Schedule, venue,	4.1 Determine types of training 4.2 Determine training requirements 4.3 Identify types of training method 4.4 Monitor staff training	<u>ATTITUDE</u> • Transparent and fair on staff training • Knowledgeable in determining training requirements	4.1 Types and module of training listed and explained 4.2 Training requirements which include training programme, facilities, objectives and mode listed and explained 4.3 Types of training method listed

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	participant, training outline) • Training facilities • Training objectives • Training mode (theory & practical) 4.3 Types of training method • Coaching • Lecture • Role play • On Job Training (OJT) • Multi skilling • Site visit 4.4 Training implementation report	4.5 Prepare training implementation report	<u>SAFETY</u> • Not Available <u>ENVIRONMENT</u> • Not Available	and explained 4.4 Staff training evaluated 4.5 Training implementation report produced
5. Coordinate meeting session	5.1 Types of meeting • Project kick off meeting • Site / progress meeting • Technical meeting • Safety committee meeting • Toolbox meeting • Valuation meeting • Urgent / adhoc meeting 5.2 Meeting requirements • Quorum • Agenda • Date	5.1 Determine types of meeting 5.2 Determine meeting requirements 5.3 Invite meeting members 5.4 Prepare minute meeting	<u>ATTITUDE</u> • Meticulous on preparing minutes of meeting • Ability to manage time • Ability to plan action before beginning a meeting <u>SAFETY</u> • Not Available <u>ENVIRONMENT</u> • Not Available	5.1 Types of meeting listed and explained 5.2 Meeting requirements listed and explained 5.3 Meeting members' attendance confirmed and listed 5.4 Minutes of meeting recorded

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Time • Venue • Minutes • Role of members 5.3 Meeting invitation • Letter • E-mail • Phone 5.4 Minutes of meeting format			
6. Supervise Health, Safety and Environment (HSE) practices	6.1 Types of HSE working requirements • Health • Safety • Environment 6.2 Types of authority form • DOSH form • DOE form 6.3 Regulatory bodies related to working HSE quality • Department Occupational Safety and Health (DOSH) • Department of Environment (DOE) • Fire and rescue department 6.4 Regulatory body acts and guidelines related	6.1 Identify HSE practices requirements 6.2 Determine types of authority form 6.3 Coordinate JSA implementation 6.4 Apply Permit to Work (PTW) 6.5 Deliver HSE requirements information to staff 6.6 Monitor HSE staff practices 6.7 Prepare HSE compliance report	ATTITUDE • Responsibility on HSE requirements • Ability to manage time • Ability to plan action • Knowledgeable in determining resources requirements SAFETY • Comply with authorities' requirements ENVIRONMENT • Comply with authorities' requirements	6.1 HSE practices requirements determined and listed 6.2 Types of authority form listed and explained 6.3 JSA implementation arranged 6.4 Permit to Work (PTW) complied 6.5 HSE requirements information to staff presented 6.6 HSE staff practices evaluated 6.7 HSE compliance report produced

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	to working environment quality and safety which includes: • Occupational Safety and Health Act (OSHA) • Environmental Quality Act 1974 (EQA) • FMA 6.5 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 6.6 Job Safety Analysis 6.7 PTW form • Working at height • Hot work • Cold work • Confined space • Lifting • Hazard material (HAZMAT) 6.8 HSE compliance report			

Employability Skills

Core Abilities

- Please refer NCS- Core Abilities latest edition.

Social Values & Social Skills

- Please refer Handbook on Social Skills and Social Values in Technical Education and Vocational Training.

References for Learning Material Development

1	Jack Asgar. 2008. The Organizational Role of Supervisors. Universal Publishers. ISBN-13: 978-1-59942-969-4
2	David Evans. 2006. 5th Edition. Supervisory Management. Thomson Learning. ISBN-13: 978-0-82645-733-2
3	Louis V.Imundo. 1993. 2nd Edition. The Effective Supervisor Handbook. AMACOM. ISBN: 0-8144-5072-5
4	Elwood N. Chapman Wil McKnight. 2003. Edition 4, The New Supervisor: Stepping Up With Confidence. Cengage Learning. ISBN: 9781560526681
5	Atty Brette McWhorter Sember, Brette McWhorter Sember and Terrence J. Sember. 2007. The Essential Supervisor's Handbook: A Quick and Handy Guide for Any Manager Or Business Owner. Career Press. ISBN: 9781564148933

15.2 Building Work Administration

SECTION	(F) Construction		
GROUP	(410) Construction of Buildings		
AREA	Building Construction		
NOSS TITLE	Building Construction Operation Supervision		
COMPETENCY UNIT TITLE	Building Work Administration		
LEARNING OUTCOMES	The outcome of this competency is to ensure arranging preliminary building construction process in sequence in accordance with work activities. Upon completion of this competency unit, trainees shall be able to: 1. Prepare work schedule 2. Monitor work progress 3. Coordinate progress claim 4. Prepare progress report 5. Handle authorities' requirements		
TRAINING PRE-REQUISITE (SPECIFIC)	Not Available		
CU CODE	F410-001-3:2019-C02	NOSS LEVEL	Three (3)

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
1. Prepare work schedule	1.1 Supervisor daily/weekly/monthly scope of work 1.2 Building construction completion period 1.3 Building construction time line 1.4 Format of site diary • Activity • Manpower • Machinery • Weather • Material delivered • Visitor	1.1 Determine scope of work 1.2 Determine completion period 1.3 Determine resources requirements 1.4 Produce work schedule	ATTITUDE • Ability to manage time • Ability to plan action before beginning a job • Knowledgeable in determining resources requirements SAFETY • Practice manual handling activities ENVIRONMENT • Not Available	1.1 Daily/weekly/monthly scope of work listed and explained 1.2 Building construction completion period within timeline identified and explained 1.3 Building construction resources requirements which include materials, tools, machinery and equipment, manpower and site diary requirements listed 1.4 Building construction work schedule produced and presented

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	1.5 Building construction resources requirements which includes • Materials • Tools • Manpower • Machinery and equipment 1.6 Scope of work activities implementation based on work schedule/program			
2. Monitor work progress	2.1 Types of construction/ subcontractor activities 2.2 Building construction daily work schedule 2.3 Checklist of daily activities 2.4 Record and report 2.5 Recovery work plan for delayed work progress 2.6 Regulatory body requirements on building construction work which includes • Safety and health • Quality control	2.1 Determine types of work / subcontractor activities 2.2 Identify work schedule 2.3 Check resources availability 2.4 Check work progress 2.5 Check work quality 2.6 Arrange recovery work plan 2.7 Fill in site diary form 2.8 Compile site diary	ATTITUDE • Ability to collaborate and cooperate with other department • Ensure timely completion of work • Ability to motivate, guide and be supportive of others to accomplish goal. SAFETY • Safety rules and regulation applied related to construction work ENVIRONMENT • Not Available	2.1 Types of work / subcontractor activities identified 2.2 Building construction work schedule listed and explained 2.3 Resources availability on materials, tools, equipment's and manpower check list updated 2.4 Work progress updated 2.5 Work quality inspection check list updated 2.6 Recovery work plan produced 2.7 Site diary form updated

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
3. Coordinate progress claim	3.1 Contractor progress claim 3.2 Contractor progress work 3.3 Contractor percentage work done evaluation • Work done quantity • Work done quality 3.4 Evaluation form	3.1 Identify progress claim requirements (types of claim, types of work) 3.2 Check progress work 3.3 Update progress claim documentation	ATTITUDE • Ability to collaborate and cooperate with other department • Diligent in following procedure SAFETY • Not Available ENVIRONMENT • Not Available	3.1 Types of claim, types of work and work requirements determined and explained 3.2 Progress work which include quantity and quality of work updated 3.3 Progress claim produced
4. Prepare progress report	4.1 Building construction progress report format 4.2 Building progress report content 4.3 Progress report • Format • Content • Submission	4.1 Determine progress report format 4.2 Determine progress report content 4.3 Check progress report data 4.4 Produce progress report	ATTITUDE • Meticulous in preparing progress report SAFETY • Not Available ENVIRONMENT • Not Available	4.1 Progress report format and progress report content listed and explained 4.2 Progress report data described 4.3 Progress report produced
5. Handle authorities' requirements	5.1 Compliance to Authorities requirements • Forms • Site visit • Decision making 5.2 Authority Approvals • Work permit (Traffic	5.1 Identify authorities' documentation and requirements 5.2 Identify types of relevant authorities 5.3 Fill in required forms 5.4 Obtain authorities' approval	ATTITUDE • Clear and effective communication in handling authority's SAFETY • Not Available ENVIRONMENT • Not Available	5.1 Authorities' documentation and requirements listed and explained 5.2 Types of relevant authorities listed and explained 5.3 Required forms such as temporary supply, water and electricity completely filled up 5.4 Authorities' approval determined

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	Management Plan (TMP), Landscape, Excavation Work, Local Authorities Compliance) • Monitoring authority's requirements			

Employability Skills

Core Abilities

- Please refer NCS- Core Abilities latest edition.

Social Values & Social Skills

- Please refer Handbook on Social Skills and Social Values in Technical Education and Vocational Training.

References for Learning Material Development

1 Ahmad Abdullah, 2006. Anggaran Kos Kerja Bangunan Petaling Jaya: Pearson Prentice Hall, 2006. ISBN: 978-983-3205-78-3
2 Griffith, Alan and Watson, Paul. 2004. Construction Management: Principles and Practice. New York : Palgrave Macmillan, 2004. ISBN 0-333-96878-6.
3 Holroyd, Trevor M. 1999. Site Management for Engineers. London : Thomas Telford Publishing, 1999. ISBN 0-7277-736-2.
4 Misnan, Mohd Saidin, et al. 2013. Pengurusan Keselamatan Projek Pembinaan. Johor Bahru : Universiti Teknologi Malaysia, 2013. ISBN 978-983-52-0917-8.
5 Osman, Omar. 2006. Pengurusan Pembinaan: Konsep, Strategi, dan Aplikasi. Pulau Pinang : Universiti Sains Malaysia, 2006. ISBN 983-861-311-8.
6 Rapp, Randy R. and Benhart, Bradley L. 2015. Construction Site Planning and Logistical Operations: Site-Focus Management for Builders. Indiana : Purdue University Press, 2015. ISBN 978-1-55753-646-4.
7 Rounds, Jerald L. and Segner, Robert O. 2011. Construction Supervision. New Jersey : John Wiley & Sons Inc., 2011. ISBN 978-0-470-61496-9.
8 Tang, S. L., et al. 2003. Modern Construction Project Management. Hong Kong : Hong Kong University Press, 2003. ISBN 962-209-567-4.

15.3 Building Work Coordination

SECTION	(F) Construction		
GROUP	(410) Construction of Buildings		
AREA	Building Construction		
NOSS TITLE	Building Construction Operation Supervision		
COMPETENCY UNIT TITLE	Building Work Coordination		
LEARNING OUTCOMES	The outcome of this competency is to ensure arranging preliminary building construction process in sequence in accordance with work activities. Upon completion of this competency unit, trainees shall be able to: 1. Verify drawing & specification 2. Coordinate material preparation 3. Coordinate site machinery 4. Coordinate manpower arrangement 5. Coordinate site preparation 6. Coordinate interfacing arrangement		
TRAINING PRE-REQUISITE (SPECIFIC)	Not Available		
CU CODE	F410-001-3:2019-C03	NOSS LEVEL	Three (3)

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
1. Verify drawing & specification	1.1 Contract documents • Drawing • Specification • Bill of Quantities • Cost • Duration 1.2 Approved construction drawing • Architecture plan • Structure plan • Mechanical and Electrical plan 1.3 Building Information	1.1 Interpret drawing & specification 1.2 Check discrepancies and conflict between drawing and specification 1.3 Update drawing and specification status	ATTITUDE • Meticulous in interpreting drawing & specification SAFETY • Not Available ENVIRONMENT • Not Available	1.1 List of drawing & specification understood and explained 1.2 Discrepancies and conflict between drawing and specification listed and explained 1.3 Drawing and specification status listed and confirmed 1.4 Building Information Modelling (BIM) explained 1.5 Green buildings concept explained

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	Modelling (BIM) • Level of development (concept design, schematic design, detail design, construction documentation, fabrication & assembling, and as-built) • Clash free analysis 1.4 Green Buildings Concept (Green Building Index (GBI), MyCrest)			
2. Coordinate material preparation	2.1 Scope of work • Location • Time • Transportation • Resources 2.2 Materials requirements • Grade • Types • Brand • Quality • Quantity	2.1 Interpret drawing & specification 2.2 Identify material requirements 2.3 Request materials 2.4 Check materials specification, quantity, and defect 2.5 Update material status	<u>ATTITUDE</u> • Meticulous in interpreting drawing & specification • Responsible on material handling <u>SAFETY</u> • Adhere safety handling procedure (MSDS, JSA) <u>ENVIRONMENT</u> • Not Available	2.1 List of drawing & specification understood and explained 2.2 Types of material and quantity/unit listed 2.3 Storage location determined 2.4 Material request form filled up 2.5 Materials specification, quantity, and defect identified and explained 2.6 Material status recorded

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
3. Coordinate site machinery	3.1 Types of site machinery 3.2 Operation schedules • Deadline • Resources • Inspection 3.3 Skill and certified Operator 3.4 Rules and Regulation • OSHA 1994 • FMA 1967 • CIDB Act 520 • DOE	3.1 Interpret drawing & specification 3.2 Identify machinery requirements 3.3 Request machinery 3.4 Update machinery status	ATTITUDE • Meticulous in interpreting drawing & specification • Responsible on machinery handling • Highly concern on authority requirements SAFETY • Adhere safety handling procedure (MSDS, JSA) ENVIRONMENT • Highly alert on schedule waste. • Disposable waste • Noise monitoring alert	3.1 List of drawing & specification understood and explained 3.2 Types of machinery and quantity/unit listed 3.3 List of authorities and PMA registration number determined and described 3.4 Machinery request form filled up 3.5 Machinery status recorded
4. Coordinate manpower arrangement	4.1 Manpower documentation • Resume • Skill competency 4.2 Attendance Format 4.3 Manpower logistic and welfare. 4.4 Contingency plan	4.1 Identify manpower requirements 4.2 Update manpower attendance list 4.3 Allocate manpower 4.4 Determine manpower contingency plan	ATTITUDE • Systematic and well-organized manpower SAFETY • Ensure safety compliance • Execute Safety training to all manpower • Practice PPE requirements ENVIRONMENT • Not Available	4.1 Manpower requirements which include trade and quantity listed and explained 4.2 Manpower attendance list prepared and checked. 4.3 Manpower logistic and welfare organised. 4.4 Effective contingency plan which include operation schedule carried out

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
5. Coordinate site preparation	5.1 Contract documents • Drawing • Specification • Bill of Quantities • Cost • Duration 5.2 Site preparation documents • Types of land title • Land Status 5.3 Public utilities requirements • Temporary site requirements • Approved construction drawing • Infrastructure plan 5.4 Types of hoarding • Metal • Timber • Plywood • Plastic 5.5 Authority requirements on hoarding installation • Size • Height • Position/ location • Materials 5.6 Hoarding installation inspection 5.7 Site clearance	5.1 Interpret drawing & specification 5.2 Identify site preparation requirements 5.3 Arrange site utilities application 5.4 Arrange site preparation work (site clearing, silt trap) 5.5 Update progress site preparation work	<u>ATTITUDE</u> • Meticulous in interpreting contract and site preparation documents <u>SAFETY</u> • Adhere to all safety regulation and SOP in coordinate site preparation <u>ENVIRONMENT</u> • Adhere to DOE standards and guidelines in coordinate site preparation	5.1 List of drawing, specification, bill of quantities, cost and duration understood and explained 5.2 Site preparation requirements which include layout, types temporary building, types of hoarding listed and explained 5.3 Site utilities application and site preparation work listed and explained 5.4 Progress site preparation work recorded

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
6. Coordinate interfacing arrangement	6.1 Contract documents • Drawing • Specification • Bill of Quantities 6.2 Types of construction drawing • Architecture drawing • Structure drawing • Mechanical and Electrical drawing • Infrastructure drawing 6.3 Types of discrepancy • Size • Level • Quantity • Specification • Location 6.4 Request for information (RFI) • Query • Solution	6.1 Interpret drawing requirements and specifications 6.2 Identify discrepancy of drawing identified 6.3 Prepare RFI 6.4 Submit RFI 6.5 Register RFI listing	ATTITUDE • Meticulous in preparing RFI SAFETY • Not Available ENVIRONMENT • Not Available	6.1 Types of drawing requirements and specifications understood and explained. 6.2 Types of discrepancy of drawing determined and described. 6.3 RFI produced and submitted. 6.4 RFI listing recorded and documented.

Employability Skills

Core Abilities

- Please refer NCS- Core Abilities latest edition.

Social Values & Social Skills

- Please refer Handbook on Social Skills and Social Values in Technical Education and Vocational Training.

References for Learning Material Development

1	Ahmad Abdullah, 2006. Anggaran Kos Kerja Bangunan Petaling Jaya: Pearson Prentice Hall, 2006. ISBN: 978-983-3205-78-3
2	Griffith, Alan and Watson, Paul. 2004. Construction Management: Principles and Practice. New York : Palgrave Macmillan, 2004. ISBN 0-333-96878-6.
3	Holroyd, Trevor M. 1999. Site Management for Engineers. London : Thomas Telford Publishing, 1999. ISBN 0-7277-736-2.
4	Misnan, Mohd Saidin, et al. 2013. Pengurusan Keselamatan Projek Pembinaan. Johor Bahru : Universiti Teknologi Malaysia, 2013. ISBN 978-983-52-0917-8.
5	Osman, Omar. 2006. Pengurusan Pembinaan: Konsep, Strategi, dan Aplikasi. Pulau Pinang : Universiti Sains Malaysia, 2006. ISBN 983-861-311-8.
6	Rapp, Randy R. and Benhart, Bradley L. 2015. Construction Site Planning and Logistical Operations: Site-Focus Management for Builders. Indiana : Purdue University Press, 2015. ISBN 978-1-55753-646-4.
7	Rounds, Jerald L. and Segner, Robert O. 2011. Construction Supervision. New Jersey : John Wiley & Sons Inc., 2011. ISBN 978-0-470-61496-9.
8	Tang, S. L., et al. 2003. Modern Construction Project Management. Hong Kong : Hong Kong University Press, 2003. ISBN 962-209-567-4.

15.4 Building Measuring Work

SECTION	(F) Construction		
GROUP	(410) Construction of Buildings		
AREA	Building Construction		
NOSS TITLE	Building Construction Operation Supervision		
COMPETENCY UNIT TITLE	Building Measuring Work		
LEARNING OUTCOMES	The outcome of this competency is to ensure the piling work carried out in accordance to drawing and specification. Upon completion of this competency unit, trainees shall be able to: 1. Perform site marking 2. Perform site levelling 3. Perform setting out		
TRAINING PRE-REQUISITE (SPECIFIC)	Not Available		
CU CODE	F410-001-3:2019-C04	NOSS LEVEL	Three (3)

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
1. Perform site marking	1.1 Contract documents • Drawing • Specification 1.2 Construction Site marking. • Location identify based on drawings (Key plan, Site plan, Location plan, Construction plan) • Marking tools & Equipment (Chalk, Spray, Line marking paint, Laser Distance measurer & Digital Levels)	1.1 Interpret drawing and specification 1.2 Identify site marking requirements 1.3 Identify site marking tools and equipment 1.4 Execute site marking 1.5 Check site marking condition	ATTITUDE • Meticulous in interpreting drawing & specification • Accurate and precise in execute marking work SAFETY • Adhere with safety PPE ENVIRONMENT • Not Available	1.1 List of drawing & specification understood and explained 1.2 Location of site marking determined 1.3 Site marking tools and equipment listed and explained 1.4 Site marking work completed 1.5 Alignment, visibility, dimension and squareness of marking confirmed and explained.

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Execute • Measurement Checking 1.3 Site marking condition. • Alignment • Visibility • Dimension • Squareness 1.4 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE			
2. Perform site levelling	2.1 Contract documents • Drawing • Specification 2.2 Construction Site levelling • Location identify based on drawings (Key plan, Site plan, Location plan, Construction plan) • Levelling tools & Equipment (Dumpy level, Measuring tape, Laser Distance measurer & Digital Levels) • Levelling execution	2.1 Obtain drawing and specification 2.2 Identify site levelling requirements 2.3 Identify site levelling tools and equipment 2.4 Execute site levelling 2.5 Check site levelling condition 2.6 Update site levelling record	<u>ATTITUDE</u> • Meticulous in interpreting drawing & specification • Accurate and precise in execute levelling work <u>SAFETY</u> • Adhere with safety PPE <u>ENVIRONMENT</u> • Not Available	2.1 List of drawing & specification understood and explained 2.2 Types of work (slab, platform, beam) listed and explained 2.3 Location of site levelling determined 2.4 Site levelling tools and equipment listed and explained 2.5 Site levelling work completed 2.6 Height dimension, horizontal of levelling work confirmed and explained. 2.7 Site levelling work recorded

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Levelling Checking 2.3 Level marking condition. • Height dimension • Flatness • Gradient 2.4 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE			
3. Perform setting out	3.1 Contract documents • Drawing • Specification • Boundary • Distance 3.2 Define the accuracy outline of the building construction 3.3 Setting out • Location identify based on drawings (Key plan, Site plan, Location plan, Construction plan) • Setting out tools & Equipment (Pegs, Nails, Strings, Hammer, measuring tape, Marking tools, Barricade tape)	3.1 Interpret drawing and specification 3.2 Identify site setting out requirements 3.3 Identify site setting out tools 3.4 Execute setting out (pegging) 3.5 Check setting out accuracy	ATTITUDE • Meticulous in interpreting drawing & specification • Accurate and precise in execute levelling work SAFETY • Adhere with safety PPE ENVIRONMENT • Not Available	3.1 List of drawing & specification understood and explained 3.2 Location of site setting out determined 3.3 Site setting out tools listed and explained 3.4 Pegging work completed 3.5 Squareness and dimension of setting out work confirmed and explained

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	3.4 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE			

Employability Skills

Core Abilities

- Please refer NCS- Core Abilities latest edition.

Social Values & Social Skills

- Please refer Handbook on Social Skills and Social Values in Technical Education and Vocational Training.

References for Learning Material Development

1 Ahmad Abdullah, 2006. Anggaran Kos Kerja Bangunan Petaling Jaya: Pearson Prentice Hall, 2006. ISBN: 978-983-3205-78-3
2 Griffith, Alan and Watson, Paul. 2004. Construction Management: Principles and Practice. New York : Palgrave Macmillan, 2004. ISBN 0-333-96878-6.
3 Holroyd, Trevor M. 1999. Site Management for Engineers. London : Thomas Telford Publishing, 1999. ISBN 0-7277-736-2.
4 Misnan, Mohd Saidin, et al. 2013. Pengurusan Keselamatan Projek Pembinaan. Johor Bahru : Universiti Teknologi Malaysia, 2013. ISBN 978-983-52-0917-8.
5 Osman, Omar. 2006. Pengurusan Pembinaan: Konsep, Strategi, dan Aplikasi. Pulau Pinang : Universiti Sains Malaysia, 2006. ISBN 983-861-311-8.
6 Rapp, Randy R. and Benhart, Bradley L. 2015. Construction Site Planning and Logistical Operations: Site-Focus Management for Builders. Indiana : Purdue University Press, 2015. ISBN 978-1-55753-646-4.
7 Rounds, Jerald L. and Segner, Robert O. 2011. Construction Supervision. New Jersey : John Wiley & Sons Inc., 2011. ISBN 978-0-470-61496-9.
8 Tang, S. L., et al. 2003. Modern Construction Project Management. Hong Kong : Hong Kong University Press, 2003. ISBN 962-209-567-4.

15.5 Piling Monitoring

SECTION	(F) Construction		
GROUP	(410) Construction of Buildings		
AREA	Building Construction		
NOSS TITLE	Building Construction Operation Supervision		
COMPETENCY UNIT TITLE	Piling Monitoring		
LEARNING OUTCOMES	The outcome of this competency is to ensure the piling work carried out in accordance to drawing and specification. Upon completion of this competency unit, trainees shall be able to: 1. Monitor driven / injection pile work 2. Monitor load test 3. Monitor Pile Driving Analyser (PDA)		
TRAINING PRE-REQUISITE (SPECIFIC)	Not Available		
CU CODE	F410-001-3:2019-C05	NOSS LEVEL	Three (3)

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
1. Monitor driven / injection pile work	1.1 Driven / injection pile work requirements • Purpose of driven / injection pile work • Method of statement • Drawing & specification • Standard of Quality 1.2 Driven / injection pile work inspection tools • Types of tools (measuring tape, spirit level, plumb bob) • Usage of tools	1.1 Interpret drawing requirements, method of statement and specifications 1.2 Determine driven / injection pile inspection tools 1.3 Check pile materials 1.4 Check casting date 1.5 Check size of pile 1.6 Check pile point 1.7 Monitor pile penetration, joint and set 1.8 Update piling record	<u>ATTITUDE</u> • Meticulous and precise in monitoring driven / injection pile • Integrity on piling work record <u>SAFETY</u> • Ensure compliance to DOSH requirements <u>ENVIRONMENT</u> • Adhere to Department of Environment requirements	1.1 Types of drawing requirements, method of statement and specifications understood and explained 1.2 Driven / injection pile Inspection tools listed 1.3 Pile materials, casting date, size of pile and pile point check list updated 1.4 Pile penetration, joint and set verified and explained 1.5 Piling record completely updated

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Function of tools 1.3 Types of driven / injection pile work • RC pile • Spun pile 1.4 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 1.5 Assessment of driven / injection pile work specification • pile materials • casting date • size of pile • pile point • pile penetration • joint • set 1.6 Types of driven / injection pile work defect • Unplaced • Crack • Deviated 1.7 Driven / injection pile work time frame preparation 1.8 Driven / injection pile			

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	work inspection form • Format (inspection request, checklist) • Content			
2. Monitor load test	2.1 Load test requirements • Purpose of load test • Method of statement (kentledge) • Drawing & specification • Standard of Quality 2.2 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 2.3 Assessment load test specification • Point • Working load • Calibration 2.4 Load test time frame preparation 2.5 Load test inspection form • Format (INSPECTION REQUEST, checklist)	2.1 Interpret drawing requirements, method of statement and specifications 2.2 Check load test point 2.3 Monitor process of load test 2.4 Update load test report	<u>ATTITUDE</u> • Meticulous and precise in monitoring load test • Integrity on load test record <u>SAFETY</u> • Ensure compliance to DOSH requirements <u>ENVIRONMENT</u> • Not Available	2.1 Types of drawing requirements and specifications understood and explained 2.2 Load test point recorded and described 2.3 Process of load test verified and explained 2.4 Load test report updated

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Content			
3. Monitor Pile Driving Analyser (PDA)	3.1 Driven / injection pile work requirements • Purpose of PDA • Method of statement • Drawing & specification • Standard of Quality 3.2 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 3.3 Assessment of PDA specification • Point • Working load • Calibration 3.4 PDA time frame preparation 3.5 PDA inspection form • Format (INSPECTION REQUEST, checklist) • Content	3.1 Interpret drawing requirements, method of statement and specifications 3.2 Check PDA test point 3.3 Monitor PDA test process 3.4 Update PDA test report	<u>ATTITUDE</u> • Meticulous and precise in monitoring load test • Integrity on load test record <u>SAFETY</u> • Ensure compliance to DOSH requirements <u>ENVIRONMENT</u> • Adhere to Department of Environment requirements	3.1 Types of drawing requirements and specifications understood and explained 3.2 PDA test point recorded and described 3.3 PDA test process verified and explained 3.4 PDA test report updated

Employability Skills

Core Abilities

- Please refer NCS- Core Abilities latest edition.

Social Values & Social Skills

- Please refer Handbook on Social Skills and Social Values in Technical Education and Vocational Training.

References for Learning Material Development

1	Ahmad Abdullah, 2006. Anggaran Kos Kerja Bangunan Petaling Jaya: Pearson Prentice Hall, 2006. ISBN: 978-983-3205-78-3
2	Griffith, Alan and Watson, Paul. 2004. Construction Management: Principles and Practice. New York : Palgrave Macmillan, 2004. ISBN 0-333-96878-6.
3	Holroyd, Trevor M. 1999. Site Management for Engineers. London : Thomas Telford Publishing, 1999. ISBN 0-7277-736-2.
4	Misnan, Mohd Saidin, et al. 2013. Pengurusan Keselamatan Projek Pembinaan. Johor Bahru : Universiti Teknologi Malaysia, 2013. ISBN 978-983-52-0917-8.
5	Osman, Omar. 2006. Pengurusan Pembinaan: Konsep, Strategi, dan Aplikasi. Pulau Pinang : Universiti Sains Malaysia, 2006. ISBN 983-861-311-8.
6	Rapp, Randy R. and Benhart, Bradley L. 2015. Construction Site Planning and Logistical Operations: Site-Focus Management for Builders. Indiana : Purdue University Press, 2015. ISBN 978-1-55753-646-4.
7	Rounds, Jerald L. and Segner, Robert O. 2011. Construction Supervision. New Jersey : John Wiley & Sons Inc., 2011. ISBN 978-0-470-61496-9.
8	Tang, S. L., et al. 2003. Modern Construction Project Management. Hong Kong : Hong Kong University Press, 2003. ISBN 962-209-567-4.

15.6 Building Structure Work Inspection

SECTION	(F) Construction		
GROUP	(410) Construction of Buildings		
AREA	Building Construction		
NOSS TITLE	Building Construction Operation Supervision		
COMPETENCY UNIT TITLE	Building Structure Work Inspection		
LEARNING OUTCOMES	The outcome of this competency is to ensure building structure work carried out in accordance to drawing and specification. Upon completion of this competency unit, trainees shall be able to: 1. Inspect building formwork work 2. Inspect reinforcement work 3. Inspect concreting work 4. Inspect roof truss work 5. Inspect prefab structure work		
TRAINING PRE-REQUISITE (SPECIFIC)	Not Available		
CU CODE	F410-001-3:2019-C06	NOSS LEVEL	Three (3)

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
1. Inspect building formwork work	1.1 Formwork work requirements • Purpose of formwork • Drawing and specification • Method of statement 1.2 Formwork inspection tools • Types of tools (measuring tape, spirit level) • Usage of tools	1.1 Interpret drawing requirements and specifications 1.2 Determine formwork inspection tools 1.3 Check dimension of form work 1.4 Check location / level of installed form work 1.5 Check alignment of installed formwork 1.6 Check stability of assembled and / or installed formwork's 1.7 Check formwork work	<u>ATTITUDE</u> • Meticulous and precise in inspecting formwork preparation • Time and cost conscious in completing task • Comply method of statement • Integrity on inspection work <u>SAFETY</u> • Ensure compliance to	1.1 Types of drawing requirements, specifications and method of statement understood and explained 1.2 Inspection tools listed and explained 1.3 Dimension of form work measured 1.4 Location / level of installed form work verified 1.5 Alignment (horizontal, vertical and slanting) of installed formwork verified 1.6 Stability of assembled and / or installed formwork's verified

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Function of tools 1.3 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 1.4 Formwork component • Ground beam • Column • Upper floor beam / roof • Floor slab • Arches • Staircase 1.5 Assessment of erect formwork specification • Dimension • Location / level • Alignment (horizontal, vertical and slanting) • Stability of assembled 1.6 Types of formwork defect • Chipping • Crack • Warping 1.7 Formwork time frame preparation	defect 1.8 Monitor time frame of formwork preparation 1.9 Prepare formwork work inspection form	HSE requirements <u>ENVIRONMENT</u> • Adhere to Department of Environment requirements (wastage)	1.7 Formwork work defect verified and explained 1.8 Time frame of formwork preparation confirmed 1.9 Formwork work inspection form produced

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	1.8 Formwork inspection form • Format (INSPECTION REQUEST, checklist) • Content			
2. Inspect reinforcement work	2.1 Reinforcement work requirements • Purpose of reinforcement • Drawing and specification • Method of statement 2.2 Reinforcement inspection tools • Types of tools (clipper, measuring tape) • Usage of tools • Function of tools 2.3 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 2.4 Assessment of reinforcement work specification	2.1 Interpret drawing requirements and specifications 2.2 Determine inspection tools 2.3 Check cleanliness of reinforcement bar 2.4 Check dimension and tightness of fabricated reinforcement 2.5 Check location / level of installed fabricated reinforcement 2.6 Check alignment of installed fabricated reinforcement 2.7 Check adequacy of spacer and fastener 2.1 Monitor reinforcement preparation time frame 2.2 Prepare reinforcement work inspection form	<u>ATTITUDE</u> • Meticulous and precise in inspecting reinforcement work • Time and cost conscious in completing task • Comply method of statement • Integrity on inspection work <u>SAFETY</u> • Ensure compliance to HSE requirements <u>ENVIRONMENT</u> • Adhere to Department of Environment requirements (wastage)	2.1 Types of drawing requirements, specifications and method of statement understood and explained 2.2 Inspection tools listed and explained 2.3 Cleanliness (rust free) of reinforcement bar verified 2.4 Dimension and tightness of fabricated reinforcement measured and verified 2.5 Location / level of installed fabricated reinforcement verified 2.6 Alignment (horizontal, vertical and gap) of installed fabricated reinforcement verified 2.7 Adequacy of spacer and fastener confirmed 2.8 Time frame of formwork preparation confirmed 2.9 Reinforcement work Inspection form produced

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Cleanliness • Dimension • Tightness • Location level • Alignment (horizontal, vertical and gap) • Adequacy of spacer 2.5 Reinforcement time frame preparation 2.6 Reinforcement inspection form • Format (INSPECTION REQUEST, checklist) • Content			
3. Inspect concreting work	3.1 Concreting work requirements • Purpose of concreting work • Drawing and specification • Method of statement 3.2 Concreting inspection tools • Types of tools (spirit level, measuring tape) • Usage of tools • Function of tools 3.3 Safety requirements	3.1 Interpret drawing requirements and specifications 3.2 Determine inspection tools 3.3 Check Mixing ratio/ design mix 3.4 Monitor conformance during slump test activities 3.5 Monitor preparation of cube sampling 3.6 Check coverage and levelness of poured concrete 3.7 Monitor compliance in concrete curing process	<u>ATTITUDE</u> • Meticulous and precise in inspecting concreting work • Time and cost conscious in completing task • Comply method of statement • Integrity on inspection work <u>SAFETY</u> • Ensure compliance to HSE requirements <u>ENVIRONMENT</u>	3.1 Types of drawing requirements, specifications and method of statement understood and explained 3.2 Inspection tools listed and explained 3.3 Mixing ratio / design mix verified 3.4 Conformance during slump test activities verified 3.5 Preparation of cube sampling verified 3.6 Coverage and levelness of poured concrete check list updated 3.7 Compliance in concrete curing process verified

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	(PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 3.4 Assessment of concreting work specification • Mixing ratio/ Design mix • Slump test • Workability • Cube sampling • Levelness • Curing process 3.5 Types of concreting defect which includes • Honeycomb • Crack • Bulging • Segregation • Cold joint 3.6 Concreting time frame preparation 3.7 Concreting inspection form • Format (INSPECTION REQUEST, checklist) • Content	3.8 Check concreting work defect 3.9 Monitor time frame of concrete work 3.10 Prepare concreting work inspection form	• Adhere to Department of Environment requirements	3.8 Concreting work defect listed and explained 3.9 Time frame of concrete work confirmed 3.10 Concreting work inspection form produced

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
4. Inspect roof truss work	4.1 Roof truss work requirements • Purpose of roof truss work • Drawing and specification • Method of statement 4.2 Roof truss inspection tools • Types of tools (spirit level, measuring tape, clipper) • Usage of tools • Function of tools 4.3 Types of truss which includes: • Truncated truss • Main truss • Half truss • Girder truss • Parallel truss 4.4 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 4.5 Working at height safety procedure 4.6 Construction and shop	4.1 Interpret drawing requirements and specifications 4.2 Determine inspection tools 4.3 Check wall plate connection, truss orientation and truss station 4.4 Check truss straightening and position work 4.5 Check rafter installation work 4.6 Check web/diagonal, top chord and bottom chord bracing work 4.7 Check batten placing marking and fixing work 4.8 Check roof truss work defect 4.9 Prepare roof truss work inspection form	<u>ATTITUDE</u> • Meticulous and precise in inspecting roofing system installation work • Time and cost conscious in completing task • Comply method of statement • Integrity on inspection work <u>SAFETY</u> • Ensure compliance to HSE requirements <u>ENVIRONMENT</u> • Adhere to Department of Environment requirements	4.1 Types of drawing requirements, specifications and method of statement understood and explained 4.2 Inspection tools listed and explained 4.3 Wall plate connection, truss orientation and truss station check list updated and verified 4.4 Truss straightening and position work check list updated and verified 4.5 Rafter installation work check list updated and verified 4.6 Web/diagonal, top chord and bottom chord bracing work check list updated and verified 4.7 Batten placing marking and fixing work check list updated and verified 4.8 Roof truss work defect listed and explained 4.9 Roof truss work inspection form produced

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	drawing details which include: - • Types of roof covering • Truss design • Dimension 4.7 Assessment of roof truss work specification • Wall plate connection, truss orientation and truss station • Truss straightening and position work • Rafter installation work • Web/diagonal, top chord and bottom chord bracing work • Batten placing marking and fixing work 4.8 Types of roof truss defect which includes • Chipping • Crack • Warping • Dented • Rusty • Uneven 4.9 Roof truss time frame preparation 4.10 Roof truss inspection			

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	form • Format (INSPECTION REQUEST, checklist) • Content			
5. Inspect prefab structure work	5.1 Prefab structure work requirements • Purpose of concreting work • Drawing and specification • Method of statement 5.2 Types of prefab • Steel • Precast concrete 5.3 Prefab structure inspection tools • Types of tools (spirit level, measuring tape, clipper) • Usage of tools • Function of tools 5.4 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 5.5 Assessment of prefab	5.1 Interpret drawing requirements and specifications 5.2 Determine inspection tools 5.3 Check steel column, steel beam, steel wall framing and steel floor joist installation 5.4 Check precast concrete column, concrete beam, concrete slab, concrete wall panel and concrete staircase installation 5.5 Check prefab structure work defect 5.6 Monitor time frame of prefab structure work 5.7 Prepare prefab structure work inspection form	<u>ATTITUDE</u> • Meticulous and precise in inspecting roofing system installation work • Time and cost conscious in completing task • Comply method of statement • Integrity on inspection work <u>SAFETY</u> • Ensure compliance to HSE requirements <u>ENVIRONMENT</u> • Adhere to Department of Environment requirements	5.1 Types of drawing requirements, specifications and method of statement understood and explained 5.2 Inspection tools listed and explained 5.3 Steel column, steel beam, steel wall framing and steel floor joist installation check list updated and verified 5.4 Precast concrete column, concrete beam, concrete slab, concrete wall panel and concrete staircase installation check list updated and verified 5.5 Prefab structure work defect listed and explained 5.6 Time frame of prefab structure work confirmed 5.7 Prefab structure work inspection form produced

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	structure work specification • Steel column • Steel beam • Steel framing wall • Steel floor joist • Precast concrete column • Precast concrete beam • Precast concrete slab • Precast concrete wall • Precast panel • Precast concrete staircase 5.6 Types of prefab structure work defect • Honeycomb • Crack • Segregation • Chipping • Warping • Dented • Rusty • Uneven 5.7 Prefab structure time frame preparation 5.8 Prefab structure inspection form • Format (INSPECTION			

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	REQUEST, checklist) • Content			

Employability Skills

Core Abilities

- Please refer NCS- Core Abilities latest edition.

Social Values & Social Skills

- Please refer Handbook on Social Skills and Social Values in Technical Education and Vocational Training.

References for Learning Material Development

1 Ahmad Abdullah, 2006. Anggaran Kos Kerja Bangunan Petaling Jaya: Pearson Prentice Hall, 2006. ISBN: 978-983-3205-78-3
2 Griffith, Alan and Watson, Paul. 2004. Construction Management: Principles and Practice. New York : Palgrave Macmillan, 2004. ISBN 0-333-96878-6.
3 Holroyd, Trevor M. 1999. Site Management for Engineers. London : Thomas Telford Publishing, 1999. ISBN 0-7277-736-2.
4 Misnan, Mohd Saidin, et al. 2013. Pengurusan Keselamatan Projek Pembinaan. Johor Bahru : Universiti Teknologi Malaysia, 2013. ISBN 978-983-52-0917-8.
5 Osman, Omar. 2006. Pengurusan Pembinaan: Konsep, Strategi, dan Aplikasi. Pulau Pinang : Universiti Sains Malaysia, 2006. ISBN 983-861-311-8.
6 Rapp, Randy R. and Benhart, Bradley L. 2015. Construction Site Planning and Logistical Operations: Site-Focus Management for Builders. Indiana : Purdue University Press, 2015. ISBN 978-1-55753-646-4.
7 Rounds, Jerald L. and Segner, Robert O. 2011. Construction Supervision. New Jersey : John Wiley & Sons Inc., 2011. ISBN 978-0-470-61496-9.
8 Tang, S. L., et al. 2003. Modern Construction Project Management. Hong Kong : Hong Kong University Press, 2003. ISBN 962-209-567-4.

15.7 Building Architectural Work Inspection

SECTION	(F) Construction		
GROUP	(410) Construction of Buildings		
AREA	Building Construction		
NOSS TITLE	Building Construction Operation Supervision		
COMPETENCY UNIT TITLE	Building Architectural Work Inspection		
LEARNING OUTCOMES	The outcome of this competency is to ensure building architecture work carried out accordingly to drawing and specification. Upon completion of this competency unit, trainees shall be able to: 1. Inspect roof finishing 2. Inspect door & window work 3. Inspect wall work 4. Inspect wall finishing 5. Inspect floor finishing 6. Inspect ceiling finishing		
TRAINING PRE-REQUISITE (SPECIFIC)	Not Available		
CU CODE	F410-001-3:2019-C07	NOSS LEVEL	Three (3)

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
1. Inspect roof finishing	1.1 Roof finishing requirements • Purpose of roof finishing • Drawing and specification • Method of statement 1.2 Roof finishing inspection tools • Types of tools (measuring tape, spirit level, clipper)	1.1 Interpret drawing requirements and specifications. 1.2 Determine inspection tools 1.3 Check dimension and installation degree of roofing finishing 1.4 Check installed roofing finishing defect 1.5 Monitor time frame of roof finishing 1.6 Prepare inspection form	<u>ATTITUDE</u> • Meticulous and precise in inspecting roof finishing work • Time and cost conscious in completing task • Comply method of statement <u>SAFETY</u> • Ensure compliance to HSE requirements	1.1 Types of drawing requirements, specifications and method of statement understood and explained 1.2 Inspection tools listed and explained 1.3 Dimension and installation degree of roofing finishing check list updated and verified 1.4 Installed roofing finishing defect listed and explained 1.5 Time frame of roof finishing work confirmed 1.6 Roof finishing Inspection form

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Usage of tools • Function of tools 1.3 Types of roof finishing • Metal deck • Concrete roof tile 1.4 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 1.5 Assessment of roof finishing specification • Dimension • Installation degree 1.6 Types of roof finishing defect • Leaking • Dented • Chipping • Crack • Rusty • Uneven 1.7 Roof finishing time frame preparation 1.8 Roof finishing inspection form • Format (INSPECTION REQUEST, checklist)		<u>ENVIRONMENT</u> • Adhere to Department of Environment requirements	produced

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Content			
2. Inspect door & window work	2.1 Door & window work requirements • Purpose of roof finishing • Drawing and specification • Standard of quality 2.2 Door & window work inspection tools • Types of tools (measuring tape, spirit level, clipper, L ruler) • Usage of tools • Function of tools 2.3 Types of door & window work • Metal (Aluminium, steel) • Timber • Glass 2.4 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 2.5 Assessment of door & window frame specification	2.1 Interpret drawing requirements and specifications. 2.2 Determine inspection tools 2.3 Check door and window frame squareness, verticality, strengthens and durability 2.4 Check door leaf and window louvres / glazing squareness, verticality, strengthens and durability 2.5 Check functionality of installed door and window 2.6 Check installed door & window defect 2.7 Monitor time frame of door and window installation 2.8 Prepare inspection form	<u>ATTITUDE</u> • Meticulous and precise in monitoring door and window installation work • Time and cost conscious in completing task • Comply method of statement <u>SAFETY</u> • Ensure compliance to HSE requirements <u>ENVIRONMENT</u> • Adhere to Department of Environment requirements	2.1 Types of drawing requirements, specifications and method of statement understood and explained 2.2 Inspection tools listed and explained 2.3 Door and window frame squareness, verticality, strengthens and durability check list updated and verified 2.4 Door leaf and window louvres / glazing squareness, verticality, strengthens and durability check list updated and verified 2.5 Functionality of installed door and window verified 2.6 Installed door & window defect listed and explained 2.7 Time frame of door and window installation verified 2.8 Door & window work inspection form produced

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Dimension • Squareness • Verticality • Strength • Durability • Location / level 2.6 Assessment of door & window leaf / louvres / glazing specification • Dimension • Squareness • Verticality • Strength • Durability • Location / level 2.7 Functionality of installed door and window 2.8 Types of door & window defect • Gap • Unfit • Unaligned • Broken • Crack 2.9 Door & window time frame preparation 2.10 Door & window inspection form • Format (INSPECTION REQUEST, checklist)			

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Content			
3. Inspect wall work	3.1 Wall work requirements • Purpose of wall work • Drawing and specification • Method of Statement 3.2 Wall work inspection tools • Types of tools (measuring tape, spirit level) • Usage of tools • Function of tools 3.3 Types of wall • Brick • Drywall • Glass 3.4 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 3.5 Assessment of wall work specification • Squareness • Verticality • Alignment	3.1 Interpret drawing requirements and specifications 3.2 Determine inspection tools 3.3 Check squareness, verticality and alignment of constructed / installed wall 3.4 Check wall work defect 3.5 Monitor time frame of wall work 3.6 Prepare inspection form	<u>ATTITUDE</u> • Meticulous and precise in monitoring wall work • Time and cost conscious in completing task • Comply method of statement <u>SAFETY</u> • Ensure compliance to HSE requirements <u>ENVIRONMENT</u> • Adhere to Department of Environment requirements	3.1 Types of drawing requirements, specifications and method of statement understood and explained 3.2 Inspection tools listed and explained 3.3 Squareness, verticality and alignment of constructed / installed wall check list updated and verified 3.4 Wall work defect listed and explained 3.5 Time frame of wall work verified 3.6 Wall work inspection form produced

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	3.6 Types of wall work defect • Unaligned • Unevenness • Crack • Hollow 3.7 Wall work time frame preparation 3.8 Wall work inspection form • Format (INSPECTION REQUEST, checklist) • Content			
4. Inspect wall finishing	4.1 Wall finishing requirements • Purpose of wall finishing • Drawing and specification • Method of Standard 4.2 Wall finishing inspection tools • Types of tools (measuring tape, spirit level) • Usage of tools • Function of tools 4.3 Types of wall finishing • Plastering • Tiling • Painting	4.1 Interpret drawing requirements and specifications 4.2 Determine inspection tools 4.3 Check squareness, coverage area, thickness and evenness of plastering work 4.4 Check wall finishing work defect 4.5 Monitor time frame of wall finishing work 4.6 Prepare wall finishing inspection form	<u>ATTITUDE</u> • Meticulous and precise in monitoring wall finishing work • Time and cost conscious in completing task • Comply method of statement <u>SAFETY</u> • Ensure compliance to HSE requirements <u>ENVIRONMENT</u> • Adhere to Department of Environment requirements	4.1 Types of drawing requirements, specifications and method of statement understood and explained 4.2 Inspection tools listed and explained 4.3 Squareness, Coverage area, thickness and evenness of plastering work check list updated and verified 4.4 Wall finishing work defect listed and explained 4.5 Time frame of wall finishing work verified 4.6 Wall finishing inspection form produced

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Cladding • Glass 4.4 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 4.5 Assessment of wall finishing specification • Squareness • Coverage area • Thickness • Evenness • Dimension 4.6 Types of wall finishing defect • Stain marks • Crack & damage • Hollowness / delaminating • Jointing • Unaligned • Unevenness 4.7 Wall finishing time frame preparation 4.8 Wall finishing inspection form • Format (INSPECTION REQUEST,			

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	checklist) • Content			
5. Inspect floor finishing	5.1 Floor finishing requirements • Purpose of floor finishing • Drawing and specification • Method of statement 5.2 Floor finishing inspection tools • Types of tools (measuring tape, spirit level) • Usage of tools • Function of tools 5.3 Types of floor finishing • Cement render • Tiling • Timber flooring • Vinyl 5.4 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 5.5 Assessment of floor finishing specification	5.1 Interpret drawing requirements and specifications 5.2 Determine inspection tools 5.3 Check squareness, coverage area, thickness and flatness of rendering work 5.4 Check floor finishing work defect 5.5 Monitor time frame of floor finishing work 5.6 Prepare inspection form	<u>ATTITUDE</u> • Meticulous and precise in monitoring floor finishing work • Time and cost conscious in completing task • Comply method of statement <u>SAFETY</u> • Ensure compliance to HSE requirements <u>ENVIRONMENT</u> • Adhere to Department of Environment requirements	5.1 Types of drawing requirements, specifications and method of statement understood and explained 5.2 Inspection tools listed and explained 5.3 Squareness, Coverage area, thickness and flatness of rendering work check list updated and verified 5.4 Floor finishing work defect listed and explained 5.5 Time frame of floor finishing work verified 5.6 Floor finishing inspection form produced

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Squareness • Coverage area • Thickness • Flatness 5.6 Types of floor finishing defect • Stain marks • Unaligned • Unevenness • Crack & damage • Hollowness / delaminating • Jointing 5.7 Floor finishing time frame preparation 5.8 Floor finishing inspection form • Format (INSPECTION REQUEST, checklist) • Content			
6. Inspect ceiling finishing	6.1 Ceiling finishing requirements • Purpose of ceiling finishing • Drawing and specification • Method of statement 6.2 Ceiling finishing inspection tools • Types of tools	6.1 Interpret drawing requirements and specifications 6.2 Determine inspection tools 6.3 Check ceiling marking level 6.4 Check squareness, levelness and alignment of installed ceiling 6.5 Check ceiling finishing	<u>ATTITUDE</u> • Meticulous and precise in inspecting ceiling finishing work • Time and cost conscious in completing task • Comply method of statement <u>SAFETY</u>	6.1 Types of drawing requirements, specifications and method of statement understood and explained 6.2 Inspection tools listed and explained 6.3 Ceiling marking level verified 6.4 Squareness, levelness and alignment of installed ceiling check list updated and verified 6.5 Ceiling finishing work defect listed and explained

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	(measuring tape, spirit level) • Usage of tools • Function of tools 6.3 Types of ceiling finishing • Suspended ceiling • Plaster ceiling • Non suspended ceiling 6.4 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 6.5 Assessment of ceiling finishing specification • Squareness • Alignment • Dimension • Location / level • Stability 6.6 Types of ceiling finishing defect • Unaligned • Uneven • Crack and damage • Rough surface • Jointing 6.7 Ceiling finishing time	work defect 6.6 Monitor time frame of ceiling finishing 6.7 Prepare inspection form	• Ensure compliance to DOSH requirements <u>ENVIRONMENT</u> • Adhere to Department of Environment requirements	6.6 Time frame of ceiling finishing verified 6.7 Ceiling finishing inspection form produced

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	frame preparation 6.8 Ceiling finishing inspection form • Format (INSPECTION REQUEST, checklist) • Content			

Employability Skills

Core Abilities

- Please refer NCS- Core Abilities latest edition.

Social Values & Social Skills

- Please refer Handbook on Social Skills and Social Values in Technical Education and Vocational Training.

References for Learning Material Development

1 Ahmad Abdullah, 2006. Anggaran Kos Kerja Bangunan Petaling Jaya: Pearson Prentice Hall, 2006. ISBN: 978-983-3205-78-3
2 Griffith, Alan and Watson, Paul. 2004. Construction Management: Principles and Practice. New York : Palgrave Macmillan, 2004. ISBN 0-333-96878-6.
3 Holroyd, Trevor M. 1999. Site Management for Engineers. London : Thomas Telford Publishing, 1999. ISBN 0-7277-736-2.
4 Misnan, Mohd Saidin, et al. 2013. Pengurusan Keselamatan Projek Pembinaan. Johor Bahru : Universiti Teknologi Malaysia, 2013. ISBN 978-983-52-0917-8.
5 Osman, Omar. 2006. Pengurusan Pembinaan: Konsep, Strategi, dan Aplikasi. Pulau Pinang : Universiti Sains Malaysia, 2006. ISBN 983-861-311-8.
6 Rapp, Randy R. and Benhart, Bradley L. 2015. Construction Site Planning and Logistical Operations: Site-Focus Management for Builders. Indiana : Purdue University Press, 2015. ISBN 978-1-55753-646-4.
7 Rounds, Jerald L. and Segner, Robert O. 2011. Construction Supervision. New Jersey : John Wiley & Sons Inc., 2011. ISBN 978-0-470-61496-9.
8 Tang, S. L., et al. 2003. Modern Construction Project Management. Hong Kong : Hong Kong University Press, 2003. ISBN 962-209-567-4.

15.8 Mechanical & Electrical Work Verification

SECTION	(F) Construction		
GROUP	(410) Construction of Buildings		
AREA	Building Construction		
NOSS TITLE	Building Construction Operation Supervision		
COMPETENCY UNIT TITLE	Mechanical & Electrical Work Verification		
LEARNING OUTCOMES	The outcome of this competency is to ensure the installation and functionality of M&E work carried out in accordance to drawing and specification. Upon completion of this competency unit, trainees shall be able to: 1. Verify plumbing system 2. Verify sanitary system 3. Verify electrical work		
TRAINING PRE-REQUISITE (SPECIFIC)	Not Available		
CU CODE	F410-001-3:2019-C08	NOSS LEVEL	Three (3)

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
1. Verify plumbing system	1.1 Plumbing system requirements • Purpose of plumbing system • Drawing & specification • Method of statement 1.2 Plumbing system inspection tools • Types of tools (measuring tape, clipper) • Usage of tools • Function of tools 1.3 Types of plumbing	1.1 Interpret drawing requirements and specifications 1.2 Determine inspection tools 1.3 Check location, materials, and size of pipe 1.4 Monitor plumbing system testing 1.5 Check plumbing system defect 1.6 Update plumbing system verification form	<u>ATTITUDE</u> • Meticulous and precise in verify plumbing system • Time and cost conscious in completing task • Comply method of statement <u>SAFETY</u> • Ensure compliance to HSE requirements <u>ENVIRONMENT</u> • Adhere to Department	1.1 Types of drawing requirements, specifications and method of statement understood and explained 1.2 Inspection tools listed and explained 1.3 Location, materials, and size of pipe check list updated and verified 1.4 Plumbing system testing verified 1.5 Plumbing system defect listed and explained 1.6 Plumbing system verification form completely updated

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Cold water • Hot water 1.4 Types of Material • PVC pipe • ABS pipe • HDPE pipe • GI pipe • Copper 1.5 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 1.6 Assessment of plumbing system specification • location • materials • size 1.7 Types of plumbing system defect • Leaking • Joint • Dented • Rusty 1.8 Plumbing system time frame preparation 1.9 Plumbing system inspection form • Format		of Environment requirements	

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	(INSPECTION REQUEST, checklist) • Content			
2. Verify sanitary system	2.1 Sanitary system requirements • Purpose of sanitary system • Drawing & specification • Method of statement 2.2 Sanitary system inspection tools • Types of tools (measuring tape) • Usage of tools • Function of tools 2.3 Safety requirements (PPE) • Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 2.4 Assessment of sanitary system specification • location • materials • size • gradient • Types of sanitary	2.1 Interpret drawing requirements and specifications 2.2 Determine inspection tools 2.3 Check location, materials, and size of sanitary pipe - checklist 2.4 Check sanitary system defect 2.5 Monitor sanitary system testing 2.6 Update sanitary system verification form	<u>ATTITUDE</u> • Meticulous and precise in verify sanitary system • Time and cost conscious in completing task • Comply method of statement <u>SAFETY</u> • Ensure compliance to HSE requirements <u>ENVIRONMENT</u> • Adhere to Department of Environment requirements	2.1 Types of drawing requirements, specifications and method of statement understood and explained 2.2 Inspection tools listed and explained 2.3 Location, materials, and size of sanitary pipe check list updated and verified 2.4 Sanitary system defect listed and explained 2.5 Sanitary system testing verified 2.6 Sanitary system verification form completely updated

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	system defect • Leaking • Joint • Dented 2.5 Sanitary system time frame preparation 2.6 Sanitary system inspection form • Format (INSPECTION REQUEST, checklist) • Content			
3. Verify electrical work	3.1 Electrical work requirements • Purpose of electrical work • Drawing & specification • Method of statement 3.2 Electrical work inspection tools • Types of tools (measuring tape, clipper) • Usage of tools • Function of tools 3.3 Types of Material • Conduit • Cable 3.4 Safety requirements (PPE)	3.1 Interpret drawing requirements and specifications 3.2 Determine inspection tools 3.3 Check location, materials, and size of conduit, cable and electrical fitting 3.4 Monitor electrical system testing 3.5 Check Electrical system defect 3.6 Update electrical system verification form	ATTITUDE • Meticulous and precise in verify electrical work • Time and cost conscious in completing task • Comply method of statement SAFETY • Ensure compliance to HSE requirements ENVIRONMENT • Adhere to Department of Environment requirements	3.1 Types of drawing requirements, specifications and method of statement understood and explained 3.2 Inspection tools listed and explained 3.3 Location, materials, and size of conduit, cable and electrical fitting checklist updated and verify 3.4 Electrical system defect listed and explained 3.5 Electrical system testing verified 3.6 Electrical system verification form completely updated

WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	ATTITUDE/ SAFETY/ ENVIRONMENT	ASSESSMENT CRITERIA
	• Types of PPE (Reflected vest, Safety boots, Hard head, Hand Glove, Goggle) • Usage of PPE 3.5 Assessment of electrical work specification • location • materials • size 3.6 Types of electrical work defect • Joint • Dented • Unplaced 3.7 Electrical work time frame preparation 3.8 Electrical work inspection form • Format (INSPECTION REQUEST, checklist) • Content			

Employability Skills

Core Abilities

- Please refer NCS- Core Abilities latest edition.

Social Values & Social Skills

- Please refer Handbook on Social Skills and Social Values in Technical Education and Vocational Training.

References for Learning Material Development

1	Ahmad Abdullah, 2006. Anggaran Kos Kerja Bangunan Petaling Jaya: Pearson Prentice Hall, 2006. ISBN: 978-983-3205-78-3
2	Griffith, Alan and Watson, Paul. 2004. Construction Management: Principles and Practice. New York : Palgrave Macmillan, 2004. ISBN 0-333-96878-6.
3	Holroyd, Trevor M. 1999. Site Management for Engineers. London : Thomas Telford Publishing, 1999. ISBN 0-7277-736-2.
4	Misnan, Mohd Saidin, et al. 2013. Pengurusan Keselamatan Projek Pembinaan. Johor Bahru : Universiti Teknologi Malaysia, 2013. ISBN 978-983-52-0917-8.
5	Osman, Omar. 2006. Pengurusan Pembinaan: Konsep, Strategi, dan Aplikasi. Pulau Pinang : Universiti Sains Malaysia, 2006. ISBN 983-861-311-8.
6	Rapp, Randy R. and Benhart, Bradley L. 2015. Construction Site Planning and Logistical Operations: Site-Focus Management for Builders. Indiana : Purdue University Press, 2015. ISBN 978-1-55753-646-4.
7	Rounds, Jerald L. and Segner, Robert O. 2011. Construction Supervision. New Jersey : John Wiley & Sons Inc., 2011. ISBN 978-0-470-61496-9.
8	Tang, S. L., et al. 2003. Modern Construction Project Management. Hong Kong : Hong Kong University Press, 2003. ISBN 962-209-567-4.

16. Delivery Mode

The following are the **recommended** training delivery modes:-

KNOWLEDGE	SKILL
• Lecture • Group discussion • E-learning, self-paced • E-learning, facilitate • Case study or Problem based learning (PBL) • Self-paced learning, non-electronic • One-on-one tutorial • Shop talk • Seminar	• Demonstration • Simulation • Project • Scenario based training (SBT) • Role play • Coaching • Observation • Mentoring

Skills training and skills assessment of trainees should be implemented in accordance with TEM requirements and actual situation.

17. Tools, Equipment and Materials (TEM)

BUILDING CONSTRUCTION OPERATION SUPERVISION

LEVEL 3

CU No.	CU CODE	COMPETENCY UNIT TITLE
CU1	F410-001-3:2019-C01	Building Construction Supervision
CU2	F410-001-3:2019-C02	Building Work Administration
CU3	F410-001-3:2019-C03	Building Work Coordination
CU4	F410-001-3:2019-C04	Building Measuring Work
CU5	F410-001-3:2019-C05	Piling Monitoring
CU6	F410-001-3:2019-C06	Building Structure Work Inspection
CU7	F410-001-3:2019-C07	Building Architectural Work Inspection
CU8	F410-001-3:2019-C08	Mechanical & Electrical Work Verification

* Items listed refer to TEM's **minimum requirements** for skills delivery only.

NO.	ITEM*	RATIO (TEM : Trainees or AR = As Required)							
		CU1	CU2	CU3	CU4	CU5	CU6	CU7	CU8
A. Tools									
1	Attendance list	1:1		1:1			1:1	1:1	
2	Builder square				1:5				
3	Components specification						1:1	1:1	
4	DOSH form	1:1							
5	Electrical work checklist								1:1
6	Feedback form	1:1							
7	Flow test (ball test)								AR
8	Flow test report								1:1
9	FMA	1:25							
10	Inspection form						1:1	1:1	
11	Installation check list						1:1		
12	Insulation test report								1:1
13	ISO document	1:1							

14	Job instruction						1:1		
15	Job specification	1:1							
16	Layout drawing						1:1		
17	Load test report					1:1			
18	Local Authorities form	1:1							
19	Machineries request form			1:1					
20	Marking tools (marker, chalk, spray, ink thread, chalk line, line marking paint, line laser)				AR				
21	Materials request form			1:1					
22	Measuring tape				1:1	1:1	1:1	1:1	1:1
23	Method of statement	1:1				1:1	1:1	1:1	1:1
24	OSHA 1994	1:1							
25	Payment certificate		1:1						
26	PDA test report					1:1			
27	Piling record					1:1			
28	Plumbing system verification form								1:1
29	Plumbing work checklist								1:1
30	PQP - Project quality plan	1:1	1:1						
31	Pressure gauge record					1:1			
32	Pressure test report								1:1
33	Progress claim		1:1						
34	Progress report	1:1	1:1	1:1			1:1	1:1	
35	Project work program (CPM) - critical path method	1:1							
36	Request form - budget	1:1							
37	S&HMS - Safety & Health Management System - safety plan	1:1							
38	Sample JSA	1:1							
39	Sample of ceiling finishing defect list							1:1	
40	Sample of company rule & regulation	1:1							
41	Sample of concreting defect list						1:1		
42	Sample of construction drawing			1:1	1:1	1:1			1:1
43	Sample of contract document	1:25	1:25	1:25	1:25	1:25	1:25	1:25	1:25
44	Sample of DOE form	1:1							

45	Sample of door and window installation defect list							1:1	
46	Sample of formwork defect list						1:1		
47	Sample of foundation defect list						1:1		
48	Sample of machineries check list			1:1					
49	Sample of material delivery order (DO)			1:1					
50	Sample of measuring form				1:1				
51	Sample of minute meeting	1:1							
52	Sample of pile Delivery Order (DO)					1:1			
53	Sample of pipe Delivery Order (DO)								1:1
54	Sample of reinforcement defect list						1:1		
55	Sample of roofing system defect list							1:1	
56	Sample of Safety report	1:1							
57	Sample of wall and door finishing defect list							1:1	
58	Sample of wall work defect list							1:1	
59	Sample of work program		1:1						
60	Sample of work schedule		1:1	1:1					
61	Sample PTW form	1:1	1:1						
62	Sanitary system verification form								1:1
63	Sanitary work checklist								1:1
64	Shop Drawing (door & window, roof truss, electrical, plumbing, sanitary, prefab)				1:1	1:1			1:1
65	Site Diary		1:1						
66	Spirit level				1:5		1:5	1:5	
67	Stationary	AR	AR		AR	AR			AR
68	Training plan	1:1							
69	Training report	1:1							
70	Utility application form (water, electricity and telephone)		1:1	1:1					
71	Vernier calliper								1:5
72	Water level hose				1:5				
B. Equipment									
1	Planning & scheduling software	1:1							
2	Dumpy level				1:5				

3	Dial gauge set					1:25			
C. Materials									
1	Wooden peg				AR				

18. Competency Weightage

The following table shows the percentage of training priorities based on consensus made by the Standard Development Committee (SDC).

BUILDING CONSTRUCTION OPERATION SUPERVISION

LEVEL 3

CU CODE	COMPETENCY UNIT TITLE	COMPETENCY UNIT WEIGHTAGE	WORK ACTIVITIES	WORK ACTIVITIES WEIGHTAGE
F410-001-3:2019-C01	Building Construction Supervision	10%	Conduct briefing session	10%
			Prepare operation budget	20%
			Monitor staff performance	15%
			Coordinate staff training	15%
			Coordinate meeting session	15%
			Supervise Health, Safety and Environment (HSE) practices	25%
F410-001-3:2019-C02	Building Work Administration	10%	Prepare work schedule	25%
			Monitor work progress	15%
			Coordinate progress claim	20%
			Prepare progress report	25%
			Handle authorities' requirements	15%
F410-001-3:2019-C03	Building Work Coordination	10%	Verify drawing & specification	15%
			Coordinate material preparation	17%
			Coordinate site machinery	17%
			Coordinate manpower arrangement	17%
			Coordinate site preparation	17%
			Coordinate interfacing arrangement	17%
F410-001-3:2019-C04	Building Measuring Work	10%	Perform site marking	20%
			Perform site levelling	30%
			Perform setting out	50%
F410-001-3:2019-C05	Piling Monitoring	10%	Monitor driven / injection pile	50%
			Monitor load test	30%
			Monitor Pile Driving Analyser (PDA)	20%

F410-001-3:2019-C06	Building Structure Work Inspection	20%	Inspect building formwork work	15%
			Inspect reinforcement work	20%
			Inspect concreting work	15%
			Inspect roof truss work	20%
			Inspect prefab structure work	30%
F410-001-3:2019-C07	Building Architectural Work Inspection	20%	Inspect roof finishing	15%
			Inspect door & window work	10%
			Inspect wall work	20%
			Inspect wall finishing	20%
			Inspect floor finishing	20%
			Inspect ceiling finishing	15%
F410-001-3:2019-C08	Mechanical & Electrical Work Verification	10%	Verify plumbing system	35%
			Verify sanitary system	25%
			Verify electrical work	40%
TOTAL PERCENTAGE (CORE COMPETENCY)		100%		
			CORE ABILITY	80 hours

Sample Calculation for Summary of Training Hours

The following table shows the nominal training hours based on recommendations made by the Standard Development Committee (SDC). For purpose of Malaysian Skills Certification through accredited centre training, the program duration is subject to Malaysian Skills Certification System.

BUILDING CONSTRUCTION OPERATION SUPERVISION

LEVEL 3

CU CODE	COMPETENCY UNIT TITLE	WORK ACTIVITY	WORK ACTIVITY TRAINING DURATION (HOURS)		TRAINING DURATION (HOURS)	SKILLS CREDIT
			KNOWLEDGE	SKILLS		
F410-001-3:2019-C01	Building Construction Supervision	Conduct briefing session	3	8	110	11
		Prepare operation budget	6	16		
		Monitor staff performance	4	12		
		Coordinate staff training	6	11		
		Coordinate meeting session	6	11		
		Supervise Health, Safety and Environment (HSE) practices	8	19		
F410-001-3:2019-C02	Building Work Administration	Prepare work schedule	8	20	110	11
		Monitor work progress	4	12		
		Coordinate progress claim	7	15		
		Prepare progress report	8	20		
		Handle authorities' requirements	4	12		
F410-001-3:2019-C03	Building Work Coordination	Verify drawing & specification	4	11	110	11
		Coordinate material preparation	6	13		
		Coordinate site machinery	6	13		
		Coordinate manpower arrangement	6	13		

		Coordinate site preparation	6	13		
		Coordinate interfacing arrangement	6	13		
F410-001-3:2019-C04	Building Measuring Work	Perform site marking	8	14	110	11
		Perform site levelling	8	25		
		Perform setting out	20	35		
F410-001-3:2019-C05	Piling Monitoring	Monitor driven / injection pile	20	35	110	11
		Monitor load test	8	25		
		Monitor Pile Driving Analyser (PDA)	8	14		
F410-001-3:2019-C06	Building Structure Work Inspection	Inspect building formwork work	8	27	230	23
		Inspect reinforcement work	8	38		
		Inspect concreting work	8	26		
		Inspect roof truss work	8	38		
		Inspect prefab structure work	30	39		
F410-001-3:2019-C07	Building Architectural Work Inspection	Inspect roof finishing	8	27	230	23
		Inspect door & window work	8	15		
		Inspect wall work	8	38		
		Inspect wall finishing	8	38		
		Inspect floor finishing	8	38		
		Inspect ceiling finishing	8	26		

F410-001-3:2019-C08	Mechanical & Electrical Work Verification	Verify plumbing system	8	30	110	11
		Verify sanitary system	8	20		
		Verify electrical work	18	26		
TOTAL HOURS (CORE COMPETENCY)			314	806	1120	112
TOTAL HOURS OF COMPETENCY UNIT					1120	
CORE ABILITY					80	

The sample calculations performed are based on table in section 18 for delivery of level 3 training program at 1120 hours excluding delivery of core abilities.