CONSTRUCTION INDUSTRY COMPETENCY STANDARD (CICS)

CERTIFIED CONSTRUCTION PROJECT MANAGER (CCPM)

Code: CPM6

LEMBAGA PEMBANGUNAN INDUSTRI PEMBINAAN MALAYSIA

CONSTRUCTION INDUSTRY COMPETENCY STANDARD (CICS)

CERTIFIED CONSTRUCTION PROJECT MANAGER (CCPM)

Code: CPM6

Description : qualification & certification, occupational definition, job profile, competency profile

Year Developed : 2019

All enquiries regarding this document should be forwarded to:

Chief Executive
Construction Industry Development Board Malaysia
35th Floor, Menara Dato' Onn
Pusat Dagangan Dunia Putra (PWTC)
No. 45, JalanTun Ismail
50480 Kuala Lumpur

Tel : 603 4047 7000
Fax : 603 4047 7310
Website:www.cidb.gov.my

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

EXPERT PANEL

THE TEAM OF EXPERT PANEL WHO CONTRIBUTED TO THE DEVELOPMENT OF THE CONSTRUCTION INDUSTRY CONPETENCY STANDARD (CICS) FOR PROJECT MANAGERS:

1.	Tan Sri (Dr). Ir Jamilus Hussein	KLIA Premier Holdings SdnBhd
2.	Nadirah Hazwani	KLIA Premier Holdings SdnBhd
3	Ar Dato' Dr. Amer Hamzah	Association Construction Project Manager (ACPM)
4.	Sr Dr Wan Maimun Abdullah	Association Construction Project Manager (ACPM)
5.	Ar Eric C.L. Gan	Association Construction Project Manager (ACPM)
6.	Ir Mohamed Mohd. Nuruddin	Association Construction Project Manager (ACPM)
7.	S Ramesh A/L Subramaniam	IJM Construction Sdn. Bhd
8.	Ong lam Seng	Gamuda Engineering Sdn. Bhd
7.	Ho Chee Leong	The Chartered Institute of Building Malaysia (CIOB)
8.	Wong Khin Yip	The Chartered Institute of Building Malaysia (CIOB)
9.	Dr Yeow Yoon Foo	The Chartered Institute of Building Malaysia (CIOB)
10.	Gan Hock Leong	The Chartered Institute of Building Malaysia (CIOB)
11.	Ar Abu Zarim Abu Bakar	Pertubuhan Arkitek Malaysia (PAM)
12.	Prof Ts. Dr. RoshanaTakim	Universiti Teknologi MARA (UiTM)
13.	LAr. Dr. Sallehuddin bin Mat Noor	UniversitiTeknologi MARA (UiTM)
14.	Sr Anuar Harun	K Builders Training and Consulting
15.	Sr Razif Ibrahim	Advantage QS Sdn. Bhd
15.	Mohammad Nazri bin Abdul Rani	Global Quality Excellence Academy
16.	Sr Dr. Mohd MazlanChe Mat	MCM Value Sdn. Bhd
16.	Azmi Baba	MCM Value Sdn. Bhd
17.	Ts. Dr Haryanti binti Mohd Affandi	Universiti Kebangsaan Malaysia (UKM)
18.	Ts. Dr Mohd. Firdaus b Mustaffa Kamal	Universiti Pendidikan Sultan Idris (UPSI)
19.	Sr Ts. Muhamad Zaihafiz bin Zainal Abidin	Infrastructure University Kuala Lumpur (IUKL)

Facilitator:
Pn. Hanishahani binti Othman CIDB

Assistant Facilitator:
Pn. Nadzhatul Syamiru Usmaiza Othman CIDB

Message from Chief Executive

The Malaysian construction industry is in the process of rapid change since the launch of the Construction Industry Transformation Programme (CITP) 2016-2020. Over the last decades, we have seen the tremendous change in the industry with the introduction of new technologies and new construction processes and systems. Clients are getting more sophisticated, demanding higher quality standards, construction within budget and tighter completion dates. This is exacerbated further by with the growing trend among larger companies to increase the value of their business through alternative procurement system such as Public private Partnership (PPP), Private Finance Initiatives (PFI), facilities management and single point responsibility project delivery.

Coping with this transformation demands the industry's human resource to transform concurrently. Project Managers are at the heart of this transformation. They operate at the heart of the project implementation process and are the focal point around which everything else in the project evolve. In orchestrating the project implementation process, they are expected to perform in challenging, variable and risky project environment to meet the demands of the projects.

Underpinning the development of this CICS is the need to enhance the development of competent Projects managers needed by the industry through the process of certification. Its development marks another milestone in the effort to further facilitate efforts to harmonise and facilitate the process of developing Certified Competent Project Managers (CCPM) needed by the construction industry. I thank all the parties involved for their valuable contribution in producing this CICS and look forward to the useful use of this document.

DATO' IR. AHMAD 'ASRI ABDUL HAMID
Chief Executive
Construction Industry Development Board (CIDB)
Malaysia

Message from Sector Head of Personnel and Contractor Development

The Construction Industry Competency Standard (CISC) for Project Manager was designed to facilitate establish the process of certifying competent project managers for the Malaysian construction industry. This was imbued on the conviction that success or the failure of construction projects is significantly contributed by competent project managers. Established to support CIDB Act 520 to certify and register Certified Construction Project Managers (CCPM), the competencies of project managers identified in this document was mapped at the National Occupational Structure at Level 6. Underpinning this aim is the necessity to provide the industry with precise definition of who the competent Project Managers are, and what competencies they should possess to manage construction projects effectively. The establishment of this CICS for Certified Construction Manager will be very significant in assisting to circumvent any ambiguity on the conception of competent project managers. Concurrently, it is also intended to serve as the reference document to streamline the existing project management education and training offered within the construction industry.

At the onset of its development, comprehensive studies were undertaken to identify the vexing issues of qualifying and certifying competent project managers in the Malaysian construction industry. Following this, the conceptual competency model for the CICS was developed after thorough review of project management competencies literatures and professional practice. This includes the project management competencies identified by the Project Management Institute (PMI) in their Project Management Body of Knowledge (PMBOK), Chartered Institute of Building (CIOB), and the Royal Institution of Chartered Surveyors (RICS) which has been widely adopted in Australia, United Kingdom and United States of America (USA), and in Malaysia by Jabatan Kerja Raya (JKR) Malaysia. Special provision was also introduced to ensure that the CICS complements the project managers' competencies recognised by international and professional construction bodies for the purpose of recognition and accreditation.

MEGAT KAMIL AZMI MEGAT RUS KAMARANI
Sector Head
Personnel and Contractor Development
Construction Industry Development Board (CIDB)
Malaysia

Foreword

The Construction Industry Competency Standard (CICS) for Project Manager establishes the competent standard of project managers in the Malaysian construction industry. The Certified Construction Manager (CCPM) is defined in this CICS as the manager who is appointed to manage construction projects which involve the process of design and construction. This contrasts the competencies of CCPM against the competencies of Certified Construction Managers (CCM) who are primarily responsible for managing the construction project 'production' activities at the project site. The CICS provides the in-depth coverage of the capabilities expected of to be performed by a CCPM by detailing the duties and tasks to be performed in the inception, design development, tendering, construction and handover stages of the project life cycle. It also the outlines the lists of what, when and how each project task should appropriately be carried out. Consideration was made to ensure sure that the project managers' competency standards underlined in this CICS are holistic and generic, and able to accommodate variable project types, sizes and procurement systems.

In addition to providing a common understanding and terms of reference for guiding project management practices, this CICS will also be relevant in facilitating the industry to design and deliver of more effective education and training initiatives.

.

For comments and feedback, please channel to www.cidb.gov.my

ASSOCIATE PROFESSOR SR. DR. FADZIL HASSAN
Expert Panel Leader

1.0 Introduction

1.1 Purpose of the Construction Industry Competency Standard (CICS) for Construction Project Managers

This was developed to specify the minimum level of competencies for certifying Competent Construction Project Managers (CCPM) for the Malaysian construction industry.

1.1.1 Definition of CICS

CICS is defined as the specification of competencies expected of construction project managers employed by a construction project organisation to effectively manage construction projects.

1.1.2 Competencies for Construction Project Managers in the CICS

The project management competencies in this CICS are underlined in the (i) Job Profile Chart and (ii) Competency Profile sections of this document.

1.1.3 Job Profile

Job Profile defines the duties and tasks required to be performed by the CCPM.

1.1.4 Competency Profile

Competency Profile defines Competency Unit (CU) i.e., Key Process, Knowledge, Skills, Attitudes (KSA), Evidence Guide and Tools/Equipment needed to accomplish the project management tasks.

1.2.1 Significance of Certified Construction Project Managers (CCPM)

The significance of CCPMs to the construction industry was acknowledged from the collective impact of the project they manage to the construction industry. This was also exemplified from requirement for their appointment in all construction contracts, and the demand for the industry to maintain their competency as underlined in the Construction Industry Master Plan (CIMP) 2006-2015 and the Construction Industry Transformation Programme (CITP) 2016-2020.

1.2.2 The need for CICS for Construction Project Managers

The need for CICS for CCPM emanates from the need to certify construction project managers who are truly competent to manage construction projects. At the industry policy level, this is enabled by upgrading the National Competency Standard (NCS), which was developed in

2002 into the current CICS. This is intended to facilitate the registration and accreditation construction personnel as required by CIDB Act 520, Part VII. Underpinning this programme was the necessity to ensure that the industry's project managers' competency profile is constantly concurrent with the changes in construction technology, procurement, and processes. This will assist to circumvent confusion that exists when defining competent construction project managers, their roles and responsibilities together with the competencies and qualifications needed to qualify them as competent. This is also to assist to streamline the provisions offered for educating and training competent construction project managers in the construction industry.

1.2.3 Definition of Certified Construction Project Manager (CCPM)

Project Manager in this document is defined as the project personnel employed to lead the construction project through the design and construction stages of the project. He or she may be employed either by a client, consultant or contractor organisation.

1.2.4 Scope of Project Management

This scope of project management is defined as encompassing all the project management activities that spans across the design and construction phases within the project life cycle (adapted from Hairuddin et al, 2018[1]) as shown in Figure 1, 2 and 3.

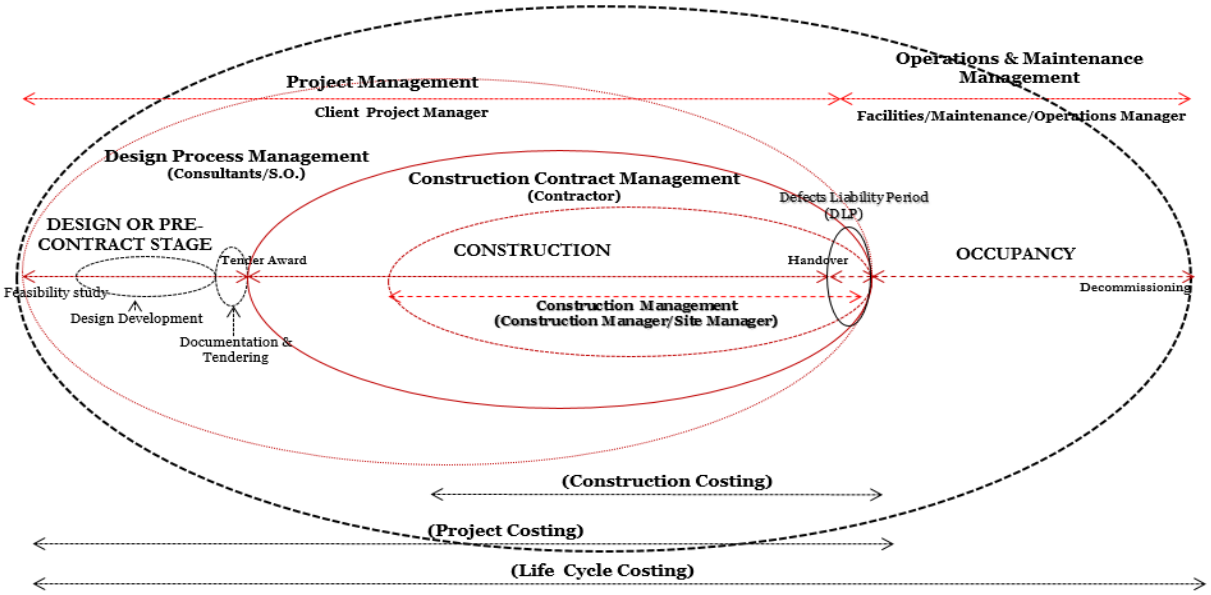

Figure 1: Management activities within the project life Cycle

[1] Hairuddin M., P. F Hassan & Siti Khalijah, Yaman (2018), Construction Handbook Series Project Management, Construction Management & Site Management, Penerbit UTHM, Johor, Malaysia

The pre-construction stages cover all the activities within the Inception, Design Development and Tendering stages. The Construction stages covers the Construction and the Occupancy stages of the project is Traditional Construction projects, as shown in Figure 2. The variant of the activities which integrates the design and construction phases in Design and Build (D&B) projects, is as shown in Figure 3.

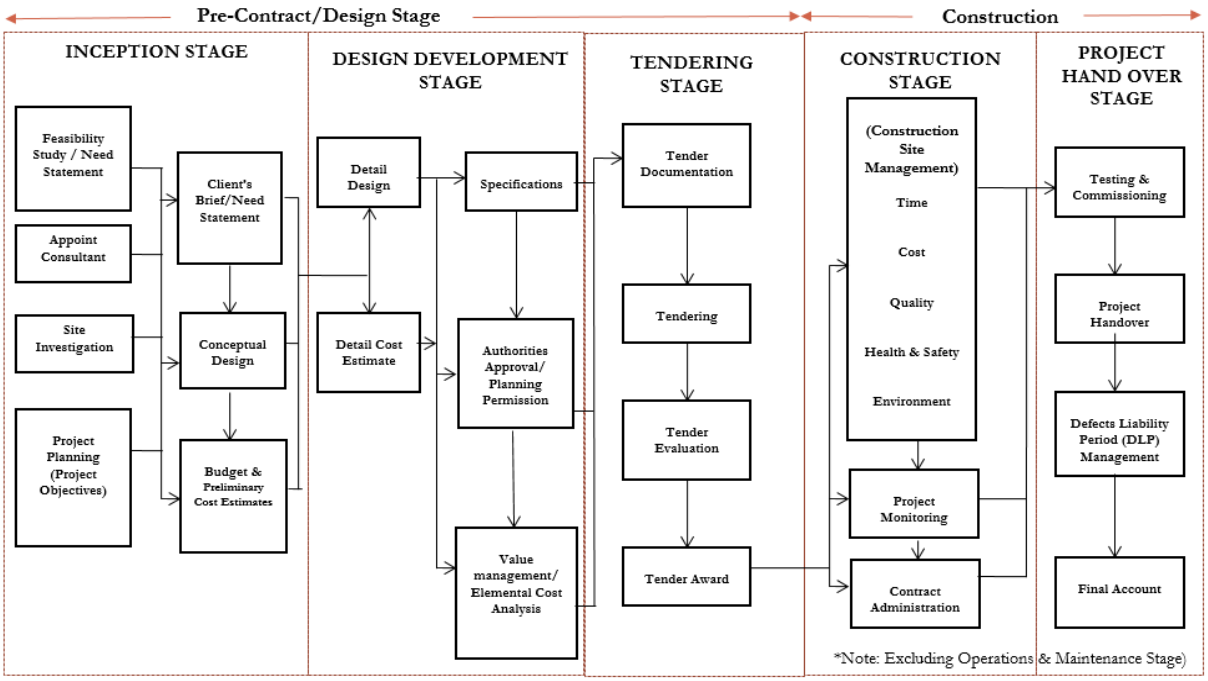

Figure 2: Activities within the project management phases in Traditional Projects

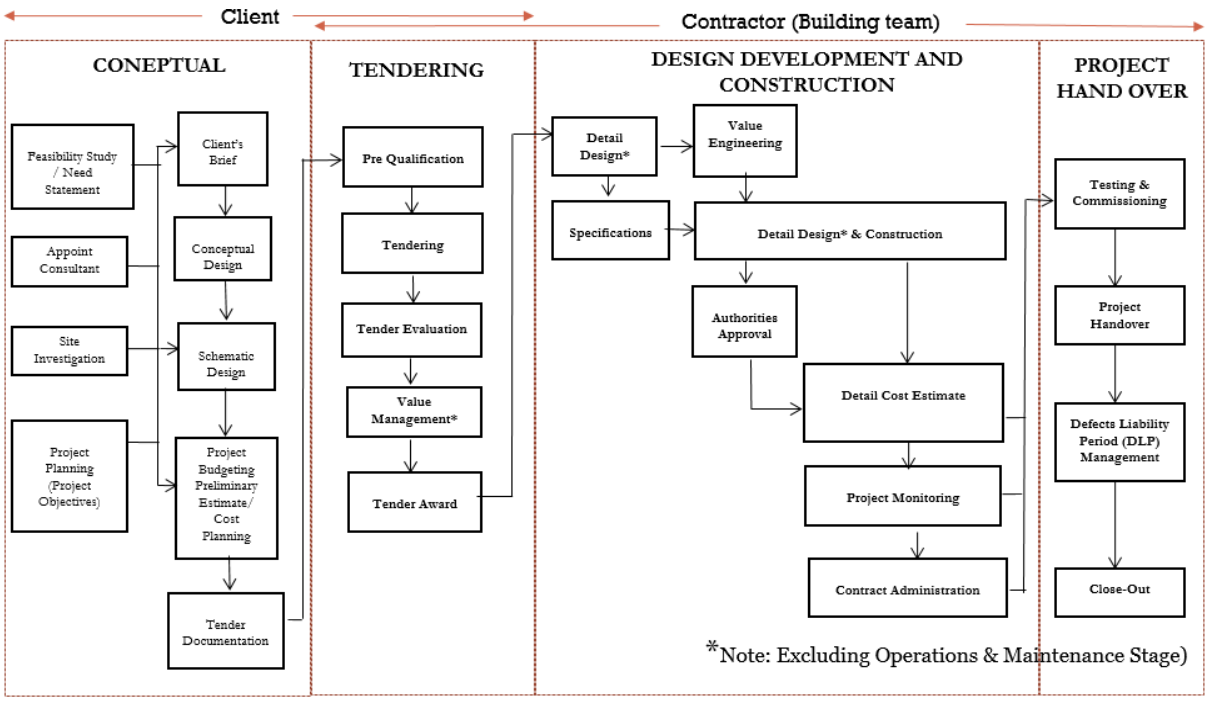

Figure 3 Activities within the project management phases in Design & Build (D&B) Projects

1.2.5 Certified Construction Project Manager (CCPM)

A Certified Construction Project Manager (CCPM) is a professional who possess the accepted level of project management competency to plan, coordinate, organise, monitor and control the construction project activities. In the course of these undertaking, he or she is capable of communicating the process, lead and motivate the project team and stakeholders towards the project objectives. A Certified Construction Project Manager (CCPM) is the professional who have met the competency standards set out in this CICS and qualified by CIDB.

2.0 Scope

This CICS stipulates the requirements for the qualification and accreditation of construction project managers in the Malaysian construction industry. The accreditation shall provide recognition of the qualifications and competence of this job function in managing construction projects.

3.0 Abbreviation

The following are the abbreviations used throughout this document:

BQ	:	Bill of Quantities
BOT/BOOT	:	Build, Operate and Transfer / Build Operate Own Transfer
BIM	:	Building Information Modelling
BOWEC	:	Building Operations and Works of Engineering Construction
CBA	:	Cost Benefit Analysis
CCC	:	Certificate Completion and Compliance
CD/A	:	Clash Detection/Analysis
CCPM	:	Certified Construction Project Manager
CIDB	:	Construction Industry Development Board
COPQ	:	Cost of Poor Quality
CICS	:	Construction Industry Competency Standard
CCM	:	Certified Construction Manager
CCPM	:	Certified Construction Project Manager
CONQUAS	:	Construction Quality Assessment (Singapore)
CPM	:	Critical Path Method
CMMS	:	Computerised Maintenance Management System
CIS	:	Construction Industry Standard

D&B	:	Design and Built
DLP	:	Defect Liability Period
EPC	:	Engineer, Procure and Construct
EPCC	:	Engineering, Procure, Construction and Commissioning
ECA	:	Elemental Cost Analysis
EA	:	Environmental Audit
EIA	:	Environmental Impact Assessment
EIP	:	Environmental Implementation Plan
EMP	:	Environmental Management Plan
EMS	:	Environmental Management System
FIDIC	:	International Federation of Consulting Engineers
GBI	:	Green Building Index
GreenRE	:	A green building rating tool in Malaysia
GFA	:	Gross Floor Area
HIRARC	:	Hazard Identification, Risk Assessment and Risk Control
HSIP	:	Health & Safety Implementation Plan
HSMS	:	Health & Safety Management System
IRR	:	Internal Rate of Return
IT	:	Information technology
JCT	:	Joint Contracts Tribunal
LoB	:	Line of Balance
MyCREST	:	Malaysian Carbon Reduction and Environmental Sustainable Tool
NPV	:	Nett Present Value
OSH	:	Occupational Safety & Health
PAM	:	Pertubuhan Arkitek Malaysia
PERT	:	Program Evaluation Review Techniques
PPP	:	Public Private Partnership
PFI	:	Private Finance Initiative
PIP	:	Project Implementation Plan
PQP	:	Project Quality Plan
PIM	:	Project Implementation Manual
QA/QC	:	Quality Assurance / Quality Control
QLASSIC	:	Quality Assessment System in Construction
QMS	:	Quality Management System
QMP	:	Quality Management Plan
QIP	:	Quality Implementation Plan
RFP	:	Request For Proposal

ROI	:	Return of Investment
SHASSIC	:	Safety and Health Assessment System in Construction
SWOT	:	Strength, Weakness, Opportunities, Threat
SIA	:	Social Impact Assessment
SMM	:	Standard Method of Measurement
T & C	:	Testing & Commissioning
TIA	:	Traffic Impact Assessment
UBBL	:	Uniform Building By Law
VA	:	Value Assessment
VM	:	Value Management
VE	:	Value Engineering
VO	:	Variation Order
WBS	:	Work Breakdown Structure

4.0 Terms and Definition

For the purpose of this CICS, the following terms and definitions apply.

4.1 Accreditation

A procedure by which the CIDB or any party authorised by it, gives formal recognition that a body or person is competent to carry out a specific task relating to the construction industry.

4.2 Applicant

Individual who is seeking certification in accordance with this CICS.

4.3 Certification

The procedure by which CIDB under Act 520, or any party authorised by CIDB, gives written assurance that a process, practice or service conforms to specified requirements.

4.4 Certification Body

CIDB is the organisation that awards credentials to individuals meeting specific competency requirements of Certified Construction Project Manager.

4.5 Competency

The combination of Knowledge, Skill and Attitude (KSA) needed to perform a task successfully and efficiently. In this document, KSA is being operationalised under Competency Unit (CU)

4.5.1 Competency Unit (CU)

Description of the competency profile needed to perform a project management activity. The CU is described in detail as follows:

4.5.1.1 Duty and Task

Responsibilities while tasks are the work or activities that need performed to accomplish a project management activity.

4.5.1.2 Key processes

Series of important actions, activities or steps that need to be undertaken to perform a particular responsibility and/or task

. 4.5.1.3. Knowledge

Facts or information needed to perform a specific duty or task

4.5.1.4. Skills

Ability to perform a duty or task which can be divided into: (i) Technical Skills, and (ii) Soft or Human Skills

4.5.1.5. Technical Skill

Technical ability to execute a task which is job specific

4.5.1.6. Soft or Human Skills

Behavioural interpersonal ability to interact with people to encourage performance which commonly relates to the ability to communicate, lead and motivate.

4.5.1.7 Attitude

Set of values needed to execute a duty or task

4.5.1.8 Evidence Guide

Describes the documented evidence as justification that the project manager has execute successfully performed the duty and task.

4.5.1.9 Tools/ Equipment /Material

Tools/ Equipment/Material describes any tool that are used to assist the project manager to perform a duty and task.

4.6 Construction Industry

The industry related to construction works which include design, manufacturing, technology, material and workmanship and services for construction.

4.7 Construction Works

As defined in Act 520 LEMBAGA PEMBANGUNAN INDUSTRI PEMBINAAN MALAYSIA 1994, construction works refers to the construction, extension, installation, repair, maintenance, renewal, removal, renovation, alteration, dismantling, or demolition of:

a. Any building, erection, edifice, structure, wall, fence or chimney, whether constructed wholly or partly above or below ground level;
b. Any road, harbour works, railway, cableway, canal or aerodrome;
c. Any drainage, irrigation or river control works;
d. Any electrical, mechanical, water, gas, petrochemical or telecommunication works; or
e. Any bridge, viaduct, dam, reservoir, earthworks, pipeline, sewer, aqueduct, culvert, drive, shaft, tunnel or reclamation works,

And includes –

(A) Any works which form an important and integral part of or are preparatory to or temporary for the works described in paragraphs (a) to (e), including site clearance, soil investigation and improvement, earth-moving, excavation, laying of foundation, site restoration and landscaping; or

(B) Procurement of construction materials, equipment or workers necessarily required for any work described in paragraphs (a) to (e).

4.8 Method Statement

The document that details the step-by-step guide on how to perform the work task and job safely.

4.9 Project Life Cycle

The sequence of phases that a project goes through from its initiation to its closure.

4.10 Project Life Cycle Phases

The phases within the project life cycle defined within document shall be deemed to cover: (i) Inception, (ii) Design Development, (iii) Tendering, (iv) Construction, (v) Handover, and (vi) Operations and Maintenance phases. The activities contained within each of the phases are as follows:

i. **Inception Phase:**

This covers activities to establish the project brief & viability; develop conceptual design and preliminary estimate; develop project implementation plan and control process; establish the procurement strategy; and establish project financing, financial planning and control processes.

ii. Design Development Phase:

This covers activities to develop the project's detail design; quality planning and control; health and safety planning and control; environmental plan and control; value management and obtain authorities' approvals processes.

iii. Tendering Phase:

This covers activities to execute the tender; and, evaluate and award the tender processes.

iv. Construction Phase:

This covers activities to monitor and control project progress; monitor and control project finances/cash flow; administer the construction contract; financial control; quality compliance; health and safety compliance; and environmental compliance processes.

v. Handover Phase:

This covers activities to handover the project; defects rectification; and project closeout/final account.

vi. Operations and Maintenance Phase:

These cover the activities to structure the completed project's operations and maintenance processes.

4.11 Resources

These are stock or supply of money, material, manpower and machinery that is needed by a person or organisation to function effectively.

4.12 Stakeholder Management

The systematic identification, analysis, planning and implementation of actions designed to engage with stakeholders. It is a set of techniques to harness the positive influences and minimises the effect of the negative influences. It comprises four (4) main steps. This are: (i) identifying stakeholders, (ii) assessing their interest and influence, (iii) developing communication management plan, and (iv) engaging and influencing stakeholders.

5.0 Occupational Structure

The occupational structure for the Construction Project Manager in the Building and Construction within the Civil Engineering Sub-Sector noted for this document is highlighted in **Table 1**.

Table 1: Occupational Structure of Construction Project Manager in Building and Construction – Sub Sector of Civil Engineering

SECTOR	**BUILDING & CONSTRUCTION**	
SUB SECTOR	**BUILDING, CIVIL ENGINEERING**	
AREA	**CONSTRUCTION**	**PROJECT MANAGEMENT**
LEVEL 6	CONSTRUCTION PROJECT MANAGER	
LEVEL 5	CONSTRUCTION MANAGER	
LEVEL 4	SITE ENGINEER	CONSTRUCTION PROJECT EXECUTIVE
LEVEL 3	SITE SUPERVISOR	CONSTRUCTION PROJECT SUPERVISOR
LEVEL 2	SITE TECHNICIAN	CONSTRUCTION PROJECT TECHNICIAN
LEVEL 1	GENERAL WORKER	

6.0 Occupational Area Structure

The occupational area structure for the Construction Project Manager in the Building and Construction within the Civil Engineering Sub-Sector noted for this document is as highlighted in **Table 2.**

Table 2: Occupational Area Structure for Construction Project Management in Building and Construction – Sub-Sector of Civil Engineering

SECTOR	**BUILDING & CONSTRUCTION**
SUB SECTOR	**BUILDING, CIVIL ENGINEERING**
AREA	**CONSTRUCTION**
LEVEL 6	CONSTRUCTION PROJECT MANAGEMENT
LEVEL 5	CONSTRUCTION MANAGEMENT
LEVEL 4	CONSTRUCTION PROJECT COORDINATION/SITE MANAGEMENT
LEVEL 3	CONSTRUCTION PROJECT SUPERVISION
LEVEL 2	SKILL CONSTRUCTION OPERATION
LEVEL 1	GENERAL

7.0 Competency Levels Definition

The CICS is developed to complement the competency level as defined by the Department of Skills Development, Ministry of Human Resources, Malaysia. There are SIX (6) levels of competencies identified for construction in the Civil Engineering Sub-Sector. The purpose of establishing the competency levels are to delineate the competencies i.e., knowledge, skills and attitude, from one level to the other and to facilitate the provision of education, training and assessment.

Table 3: The Competency Levels in Building and Construction – Sub-Sector of Civil Engineering

Malaysia Skills Certificate Level 1: (Operation Level)	Competent in performing a range of varied work activities, most of which are routine and predictable.
Malaysia Skills Certificate Level 2: (Operation Level)	Competent in performing a significant range of varied work activities, performed in a variety of contexts. Some of the activities are non-routine and require individual responsibility and autonomy.
Malaysia Skills Certificate Level 3: (Supervisory Level)	Competent in performing a broad range of varied work activities, performed in a variety of contexts, most of which are complex and non-routine. This also include taking a considerable amount of responsibility, autonomy and control, and guidance others to perform the tasks.
Malaysia Skills Diploma Level 4: (Executive Level)	Competent in performing a broad range of complex technical or professional work activities which takes place within a variety of contexts with autonomy. This also include in-part taking responsibility over the allocation of resources and work of others.
Malaysia Skills Advanced Diploma Level 5: (Managerial Level)	Competent in performing a range of duties which involves the application of complex techniques within a wide range and often unpredictable circumstances. This include taking significant responsibility for the work of others, allocation of substantial resources and the planning, organising, monitoring and control of the project processes.
Malaysia Skills Degree LEVEL 6:(Strategic Level)	Competent in applying a significant range of fundamental principles and complex technique across a wide and often significant responsibilities for the work of others and for the allocation of substantial resources featured strongly, as do diagnosis, responsible for planning, execution to underpin substantial change or development, and evaluation. as well as exercising broad autonomy and judgment

8.0 Qualification and Certification

8.1 Certification Method Routes

There are **THREE (3)** alternative methods a candidate can apply to become a CCPM, which are as follows:

Method 1: Training and Assessment

This method required candidates to undertake all 15 learning packages (training) and pass the assessment. The method of delivery for this method is through lectures.

Method 2: Assessment Only

This method required candidates to undertake written assessment of 120 questions within 3 hours which include Knowledge Assessment (KA) and Practical Assessment (PA).

Method 3: Qualification through Experience and Education Background.

This method required candidates to be assess through professional and portfolio assessment based on experience, knowledge, skills and attitude in construction project management field.

The requirements and alternative routes to quality as a Certified Competent Project Manager (CCPM) is shown in Table 4.

Table 4 : Route for applying to become a Certified Competent Project Manager (CCPM)

Categories	Minimum Entry Requirement	Min. Years of Experience Required In Construction/Related Field		
		Method 1	Method 2	Method 3
1	Registered Malaysian Professional (Ar, Ir, Sr,)	-	3	5
2	Master's in project management / or related to construction	3	5	6
3	Master in project management / construction related courses or International certificate in Project Management e.g. PMP(PMI),CPM(UK),CPM(IPMA),Reg. PM(AIPM) CIOB, AIB	3	6	8
4	Degree in Construction Related Field	5	7	10
5	Degree in Non-Construction Related Field	8	10	12
6	Diploma in Construction Field	8	10	12
7	Diploma in Non-Construction Related Field	10	12	15
8	Certificate in Construction Related Field	10	12	15
9	Sijil Kemahiran Malaysia – Construction Manager (LEVEL 5)	5	7	10

8.2 Qualifying Routes

There are **THREE (3)** alternative routes a candidate can apply to become a CCPM, and this is are as shown in **Table 3**.

8.3 Certification and Eligibility Requirements

Upon successful assessment, verification and having fulfilled the CIDB certification requirements, candidates shall be awarded with a Certified Construction Project Manager (CCPM) certificate. The assessments made must be in accordance with t CIDB training and assessment policy.

9.0 Use of CCPM Professional Designation

Individuals granted with certification by CIDB in accordance with this CICS shall be eligible to use the title **Certified Construction Project Manager (CCPM)** as long as the individual maintains an active certification status. CIDB corporate rules and regulations stipulates that the accredited individuals are authorised to affix the CCPM designation in block letters after their name on business cards, personal letterhead, resumes, websites and in their email signature.

Accredited individuals are **NOT ALLOWED** to use the CPM designation in company names, domain names, product names, or any other unauthorised manner.

10.0 Occupational Definition

10.1 Certified Construction Project Manager (CCPM)

10.1.1 A CCPM is defined as individual who possess the accepted level of knowledge, skill and ability assigned to manage the construction project design and construction activities to achieve the project objectives.

10.1.2 The tasks and roles of a CCPM is to plan, organise, monitor and control the activities within the project's inception, design development, tendering, construction, and handover phases of the project life cycle. During the process he or she is expected to be able effectively communicate, motivate and lead the project participants towards the project objectives.

10.1.3 To enable the CPM to undertake the tasks and roles, he or she is expected to possess adequate knowledge, skill and ability on the followings:

1. FUNDAMENTALS OF PROJECT MANAGEMENT COMPETENCY
2. PROJECT INITIATION
3. CONCEPTUAL DESIGN & PRELIMINARY ESTIMATE
4. PROCUREMENT MANAGEMENT

5. PROJECT PLANNING, MONITORING AND CONTROL

6. PROJECT FINANCIAL MANAGEMENT

7. DESIGN DEVELOPMENT & AUTHORITY LIAISON

8. QUALITY MANAGEMENT

9. HEALTH AND SAFETY MANAGEMENT

10. ENVIRONMENTAL MANAGEMENT

11. VALUE MANAGEMENT

12. TENDER MANAGEMENT

13. CONTRACT MANAGEMENT

14. PROJECT HANDOVER AND CLOSE-OUT

15. OPERATION AND MAINTENANCE

16. PROJECT PEOPLE & TEAM MANAGEMENT

11.0 CCPM Occupational Chart

The CCPM Occupational Chart showing the structure for the Construction Project Manager is as shown in **Table 4**.

Table 5: Occupational Chart for CCPM

SECTOR	**BUILDING & CONSTRUCTION**		
SUB SECTOR	**BUILDING, CIVIL ENGINEERING**		
JOB AREA	**CONSTRUCTION PROJECT MANAGEMENT**		
CICS TITLE	**CONSTRUCTION PROJECT MANAGER**		
JOB LEVEL	**SIX (6)**	**CICS CODE**	

12.0 Job Profile Chart: CPM Duties and Task

The description of the Duties and Tasks that need to be performed in each activity within each project management phase are detailed out in the preceding sections of this document as follows:

DUTY → ← TASK →

MANAGE PROJECT INCEPTION	Initiate the Project		Develop Conceptual Design & Preliminary Estimate		Establish Project Brief & Viability		Establish Project Procurement Strategy		Develop Project Implementation Planning & Control Process		Establish Project Financing, Financial Planning & Control Process	
1.0	1.01	L6	1.02	L6	1.03	L6	1.04	L6	1.05	L6	1.06	L6

MANAGE DESIGN DEVELOPMENT	Establish Project Detail Design		Establish Project Quality Planning& Control Process		Establish Project Health & Safety Planning and Control Process		Establish Project Environmental Planning and Control Process		Administer Value Management		Obtain Authorities Approval	
2.0	2.01	L6	2.02	L6	2.03	L6	2.04	L6	2.05	L6	2.06	L6

EXECUTE TENDER	Tender, Evaluate & Award the Project	
3.0	3.01	L6

DUTY → TASK →

PROJECT MONITORING & CONTROL	Monitor & Control Project Progress		Monitor & Control Project Finances/Cash Flow		Administer Construction Contract		Monitor & Control Project Quality Compliance		Monitor & Control Project's Health & Safety Compliance		Monitor & Control Environmental Requirement Compliance	
4.0	4.01	L6	4.02	L6	4.03	L6	4.04	L6	4.05	L6	4.06	L6

ADMINISTER PROJECT HANDOVER	Testing & Commissioning	
5.0	5.01	L6

ESTABLISH OPERATIONS &MAINTENANCE PLAN	Establish Project Operation Plan		Establish Facility Maintenance Plan	
6.0	6.01	L6	6.02	L6

13.0 Competency Profile Chart: CPM Competency Unit (CU)

1.0 MANAGE PROJECT INCEPTION

1.01 Initiate the Project

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**1.01**	**DUTY:**	**INITIATE THE PROJECT**
TASK NO:	**1**	**TASK:**	**ESTABLISH THE PROJECT TEAM**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Initiate Project Team Formation • Gather Client's Statement of Need • Define project scope and limitations • Establish design brief 1.2 Select & Appoint Consultants • Interview & negotiation • Technical proposal • Proposed fee • Agreement • Proposal evaluation & selections • Shortlist consultants • Quality based selection method • Fee bidding method • Design competition method • Request for proposals • Statement of work • Areas of expertise required • Time schedule • Type of contract proposed	Knowledge in: • Client and consultants' profile • Consultancy agreement and packages • Type of projects • Project management • Client's needs analysis • Human resources management • Contract management Skills: • Technical skills: - Consultancy capability and competency assessment. - Value planning - Business case • Soft skills management: - Creating positive working relationship - Communication using written and oral medium - Team leadership skills - Negotiation skills Attitude: • Ethical • Objective • Analytical	• Consultants company profile • Consultants' assessment report. • National value management guide • Organisation procedure	• Project references. • Expert judgement • Business case analysis • Focus group discussion • Facilitated workshop • Product analysis • Alternative identification • Observation • Benchmarking • Validate option

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**1.01**	**DUTY:**	**INITIATE THE PROJECT**
TASK NO:	**2**	**TASK:**	**INVESTIGATE PROJECT SITE**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
2.1 Site Investigation • Site accessibility • Site survey • Ownership record investigation • Soil investigation • Required easement • Utilities availability • Existing structures • Site restrictions • Supply chain	Knowledge in: • Site topography. • Authorities and statutory requirements. • Utilities/infrastructure networks. • Risk management. • Client financial capacity • Supply chain constraints • Land matters Skills: • Technical skills: - Site risk (land, site conditions, supply chain, land matters, etc.) identification • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Observant • Analytical • Objective • Resourceful	• Ordinance survey maps. • Survey plan. • Site investigation report • Bore log reports • Utility mapping • Local authority development guideline	• Master plans. • Land title. • Political and Economic reports • Authorities approval documents • Supply chain directory/data base. • Inventory analysis • Observation

1.02 Develop Conceptual Design & Preliminary Estimate

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**1.02**	**DUTY:**	**DEVELOP CONCEPTUAL DESIGN & PRELIMINARY ESTIMATE**
TASK NO:	**1**	**TASK:**	**ESTABLISHING PROJECT PROGRAM (SCOPE, FEATURES, FUNCTION, ETC)**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Statement of Need (Project Brief) • Establish project scope • Establish project Objective • Identify / clarify project needs • Identify final product Function 1.2 Programme Development (Design Brief) • Functional floor area • Function analysis (engineering) • Functional brief • Vertical circulation spaces • Horizontal circulation spaces • System requirement • Services requirement	Knowledge in: • Understand client/user requirement • Client's brief • Need statement • Design analysis • Needs documentation Skills: • Technical skills: - Recording and documenting needs requirement - Reading design using IT softwares - Assessing technical reports • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Observant • Analytical • Objective	• Project program checklist • Authorities approval guidelines and documents • Uniform Building By Laws • Organisation standards and guidelines	• Space and function analysis references • Design analysis documents. • BIM software • Design management framework • Interview • Facilitated workshop • Product analysis • Alternative identification • Expert judgement • Stakeholders analysis • Validate deliverables • Product analysis • Requirement elicitation • Focus group discussion • Document analysis

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**1.02**	**DUTY:**	**DEVELOP CONCEPTUAL DESIGN & PRELIMINARY ESTIMATE**
TASK NO:	**2**	**TASK:**	**PROJECT CONCEPT DEVELOPMENT**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
2.1 Design Review • Functional analysis • Circulation space analysis • Project elemental analysis: - Earthworks - Building - Mechanical & electrical - Civil & structural elements - Infrastructure works - Lifecycle cost analysis • Construction safety • Constructability • Maintenance 2.2. Risk Identification, Assessment, Mitigation & Control Plan.	Knowledge in: • Authorities requirements • Capturing, recording and documenting needs requirement • Identify factors to be documented for design • Ability to forecast the probable outcome and requirement elicitation • Value engineering Skills: • Technical skills: - Reading project design - IT softwares application - Assessing technical reports - Interpret/ analyse design - Cost evaluation - Cost risk analysis - Assessing technical reports - Project reporting & presentation • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Observant • Analytical • Resourceful • Objective	• Project program checklist • Authorities approval guidelines and documents • Uniform Building by Laws • Value Management (VM) guide • Value Management (VM) report	• Space and function analysis references • Design analysis documents. • BIM software • Facilitated workshop • Life cycle analysis • Value engineering • Alternative identification • Expert judgement • categorization • Risk probability impact and assessment • Option analysis • Document analysis

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**1.02**	**DUTY:**	**DEVELOP CONCEPTUAL DESIGN & PRELIMINARY ESTIMATE**
TASK NO.:	**3**	**TASK:**	**ESTABLISH COST ESTIMATE**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
3.1 Establish Project Preliminary Estimate Method 3.2 Evaluate project preliminary Estimate: • Cost Planning • Project Life Cycle Cost	Knowledge in: • Preliminary estimating techniques • Alternative procurement system • Development cost estimating methods/process • Lifecycle, development and construction costing • Cost of money, present value • Estimating risk and mitigation • Project viability • Project reporting & presentation Skills: • Technical skills: - Analysing preliminary estimates and project viability - Assessing technical reports - Project reporting & presentation • Soft skills management: - Creating positive working relationship and environment - Communication (written, oral and IT) skill - Team leadership skills Attitude: • Ethical • Observant • Analytical • Objective	• Project preliminary estimate report • Basis of estimate	• Preliminary estimating documents (Unit Method, Floor Area Method, Cubic Method, Cost Yardstick& Cost Modelling& aggregation) • Benchmarking • Reserved analysis • Contingency • Project estimate software • Expert judgement

1.03 Establish Project Brief & Viability

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**1.03**	**DUTY:**	**ESTABLISH PROJECT BRIEF & VIABILITY**
TASK NO:	**1**	**TASK:**	**EXECUTE MARKET STUDY**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Establish Project Definition & Scope • Statement of Requirement • Benefits • Constraints 1.2 Identify Market Demand & Impact Analysis • PASTEL (Political, Economic, Social, Technological, Environmental and Legal)	Knowledge in: • Market environment/trends. • Market analysis methods. • Demographics/statistics. • National economic trends • Risk analysis • Project life cycle, development and construction costing. • Financial modelling • Project reporting & presentation Skills: • Technical skills: - Viability data analysis. - Predict/forecasting market trends. - Viability risk assessment - Analysing technical reports - Preparing technical reports • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Observant • Analytical • Objective	• Market research report.	• Project statistical data • Industry reports and statistics

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**1.03**	**DUTY:**	**ESTABLISH PROJECT BRIEF & VIABILITY**
TASK NO:	**2**	**TASK:**	**CONDUCT PROJECT IMPACT ANALYSIS & SWOT ANALYSIS**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
2.1 Establish Project Development Impact Assessment • Environmental Impact Assessment (EIA) • Traffic impact assessment (TIA)* • Social Impact Assessment (SIA)* • Others (current statutory requirement) * 2.2 Conduct Project SWOT Analysis • Strength • Weakness • Opportunities • Threat	Knowledge in: • Statutory requirements. • Marketing techniques • Statutory/authorities' requirements. Skills: • Technical skills: - Project economic financial assessment - Statutory body/authorities' roles and responsibilities - Authorities' approval process - Analysing technical reports • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Observant • Analytical • Objective	• Project impact analysis/SWOT reports	• Project Plans (layout plans, survey plans, and topographic plans. • Expert judgement

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**1.03**	**DUTY:**	**ESTABLISH PROJECT BRIEF & VIABILITY**
TASK NO:	**3**	**TASK:**	**ANALYSE PROJECT FEASIBILITY/COST BENEFIT**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Prepare Feasibility Study 1.2 Feasibility Analysis • Income/benefit • Project Costing - Land Cost - Conversion Cost - Consultants' Fees - Authorities Fees - Cost of Construction - Environmental mitigation cost - Financing Cost & Scheduling 1.3 Technical Feasibility Analysis • Constructability • Construction schedule • Construction safety and health	Knowledge in: • Statistic and economics. • Marketing, market assessment techniques and trends. • Project budgeting. • Statutory and authorities' requirements. Skills: • Technical Skills: - Compile project report. - Analyse project information. - Assess project feasibility. - Prepare report. • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Observant • Analytical • Objective	• Method statements • Cost study reports. • Option analysis	• Taxation rules. • Cost data (Elemental Cost Analysis) (ECA) from previous project) • BIM software (CostX,Glodon etc.) • Focus group analysis • Interview • Stakeholder management • Alternative analysis • Expert judgement • Business case

1.04 Establish Project Procurement Strategy

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**1.04**	**DUTY:**	**ESTABLISH PROJECT PROCUREMENT STRATEGY**
TASK NO:	**1**	**TASK:**	**IDENTIFY PROJECT NEEDS ANALYSIS & CONSTRAINTS**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Review Project's Statement of Need/Client's Brief: • Project Definition • Project Scope • Project Financing 1.2 Assess Project Constraints: • Technical/Economic & Construction Constraints • Safety Requirement Constraints • Environmental Requirement Constraints • Authority Requirement Constraints • Financial Constraints	Knowledge in: • Alternative procurement methods. • Earned value management • Project delivery processes. • Supply chain • Tendering methods • Financial impact and constraint. • Statutory requirements. Skills: • Technical skills: - SWOT analysis. - Select services and material procurement. - Evaluate, compare and decide options based on clients need. • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Observant • Analytical • Objective	• Procurement analysis reports. • Project impact analysis/SWOT reports • Master schedules • Design management framework report .	• Suppliers/contractors database. • Pricing and product database. • Inventory control documents. • Stakeholder risk analysis

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL6)			
DUTY NO:	**1.04**	**DUTY:**	**ESTABLISH PROJECT PROCUREMENT STRATEGY**
TASK NO:	**2**	**TASK:**	**IDENTIFY PROJECT PROCUREMENT STRATEGY**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
2.1 Analyse Procurement Route Alternatives • Traditional/Conventional System • Design and Built (D&B) • Design and Manage / Engineer, Procure and Construct (EPC/EPCC) • Turnkey • Built, Operate and Transfer (BOT/BOOT) • Public Private Partnership (PPP) 2.2 Perform SWOT Analysis 2.3 Establish Procurement Strategy	Knowledge in: • Project objectives and constraints on project • Procurement risks • Project complexity • Tendering methods • Key processes and activities to be performed • The available procurement strategies and contracts • Relevant Capital Work Management policy requirements. Skills: • Technical skills: - SWOT analysis. - Services and material procurement selection. - Tender administration - Evaluate, compare and decide options based on clients need. • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Analytical • Objective • Attention to details	• Procurement analysis reports. • Project impact analysis and/or SWOT reports • Master schedules	• Suppliers/contractors database. • Pricing and product database. • Inventory control references.

1.05 Develop Project Implementation Planning and Control Process

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**1.05**	**DUTY:**	**ESTABLISH PROJECT IMPLEMENTATION PLANNING & CONTROL PROCESS**
TASK NO:	**1**	**TASK:**	**ESTABLISH PROJECT PLAN & SCHEDULE**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Establish Project Plan, Programme & Work Breakdown Structure • Master Program • Medium-Term Program • Work Breakdown Structure (WBS) • Short-Term program • Resource Scheduling • Resource Levelling • Construction method statement • Rolling wave planning 1.2 Develop the Project's Method Statement • Construction sequence • Construction method • Material requirement and specifications • Labour and workmanship Master Program • Plant and machineries requirements	Knowledge in: • Planning and scheduling techniques (Gantt Chart, Program Evaluation Review Techniques (PERT), Critical Path Analysis **(**CPM @ CPA), LoB) • Construction site layout plan • Method Statement • Construction methodology • Resource planning & scheduling Skills: • Technical skills: - Determine the sequence, duration, and resources for construction work - Linking the project plans to project's schedules and S-curve - Project planning and programming using software • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Analytical • Objective • Attention to details	• Method Statement • Work Breakdown Structure (WBS) • Project Master Programmes, Mid-Term/Short Term Programmes • Organisation portfolio & program • Published productivity data • Project Implementation Plan (PIP)	• Project data • IT related softwares (Primavera, Microsoft project, BIM, Spreadsheet, Excel, etc.) • Decomposition • Expert judgement • Published estimating data • Variance analysis • Performance review • Critical path method • Scheduling compression / crashing • Applying lead/lags • Reserved analysis • Critical chain method • Schedule network analysis • Resources schedule • Progress reporting

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**1.05**	**DUTY:**	**ESTABLISH PROJECT IMPLEMENTATION PLAN & CONTROL PROCESS**
TASK NO:	**2**	**TASK:**	**ORGANISE WORK BREAKDOWN STRUCTURE FOR IMPLEMENTATION**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
2.1 Identify/Map Project Stakeholders' Responsibilities & Tasks • Within the Project Plans (Master Program, Mid-Term Program, Short term Program) • Inception, Design Development, Tendering, Construction, Handover, Operations & Maintenance • Establish project organisation structure *(Identify and assign Who does What and When)* 2.2 Communicate Project Stakeholders' Responsibilities & Tasks • Within the Project Plans (Master Program, Mid-Term Program, Short-term Program): • Inception, Design Development, Tendering, Construction, Handover, Operations & Maintenance	Knowledge in: • The tasks that need to be carried out by the project stakeholders/parties in planning and controlling the project implementation activities within the project life cycle phase. • Communicating the scope of work, role and responsibilities to the project's stakeholder/parties planning and controlling the project implementation activities • The strategies to overcome the constrains/limitations that may confronting the planning and control of the project implementation activities Skills: • Technical skills: - Allocating the tasks to be carried out within the activities in the project life cycle phase according to the project stakeholders/parties. - Communicating the strategies to overcome the planning and controlling constrains/limitations • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Analytical • Objective • Observant	• Project Implementation Manual/System (PIM/PMS) • Resource Schedules	• IT related softwares (Primavera, Microsoft project, BIM, Spreadsheet, Excel, etc.) • Minutes of meeting, • Social media (WhatsApp, Facebook, Emails, Online portals, etc.) • Decomposition • Expert judgement • Interview • Meetings • Focus group discussion

1.06 Establish Project Financing, Financial Planning & Control Process

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**1.06**	**DUTY:**	**ESTABLISH PROJECT FINANCING, FINANCIAL PLANNING & CONTROL PROCESS**
TASK NO:	**1**	**TASK:**	**ESTABLISH PROJECT CASH FLOW**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Project Cash Flow Forecasting: • Working capital management - Internal / external • Inflow: - Income and claims - Financial facilities - Service factoring • Outflow - Overheads - Land cost - Professional fees - Authorities charges - Construction Cost - Financing Cost 1.2 Project Cash Flow Evaluation: • Capital Lock-Up • Sensitivity analysis • Payback period (NPV, IRR,ROI and Yield) • Capital Financing/ & Financing Cost • Others (if any) 1.3 Project Cash Flow Management & Control Plan	Knowledge in: • Project income and expenditure • Project viability analysis (S-curve, Saw- tooth Diagram, Capital Lock-Up, Payback Period, Break Even Point) • Project Finance • Financial institutional requirement • Financial accounting • Financial ratio – acid test • Financial risk management Skills: • Technical skills: - Establish project cash flow - Undertake financial risk analysis - Comprehend financial statement - Making sound project finance recommendation • Soft skills management: - Creating positive working relationship and environment - Communication using written and oral medium - Team leadership skills Attitude: • Ethical • Analytical • Objective • Observant	• Project cash flow project report • Project financial analysis reports	• Project financial & Physical S-Curve • Cash flow projection • Risk analysis documents • Financial reports • Performance review • Variance analysis • Expert judgement

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**1.06**	**DUTY:**	**ESTABLISH PROJECT FINCNCING, FINANCIAL PLANNING & CONTROL PROCESS**
TASK NO:	**2**	**TASK:**	**ESTABLISH PROJECT FINANCING**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
2.1 Project Financing Options: • Terms loan • Bridging loan • End financing • Internally generated funding • Equity financing 2.2 Project Financial Plan: • Financing strategy 2.3 Project Financial Risk Analysis	Knowledge in: • Securing/preparing financial institution working papers/ business proposal. • Categorising project financial risks • Financial risk assessment Skills: • Technical skills: - Interpret financial viability and feasibility - Implement financial mitigation measures and financing contingencies - Develop bankable project documentation • Soft skills management: - Creating positive working relationship and environment - Communication using written and oral medium - Team leadership skills Attitude: • Analytical • Objective • Observant	• Risk analysis reports • Financial reports • Procurement strategy documents/reports	• Project financial & Physical S-Curve • Cash flow projection • Financial institution, Bank Negara and Security Commission guidelines • Expert judgement • Business case (analysis)

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**1.06**	**DUTY:**	**ESTABLISH FINANCIAL PROJECT PLANNING & CONTROL PROCESS**
TASK NO:	**3**	**TASK:**	**ESTABLISH PROJECT'S FINANCIAL ORGANISATION & CONTROL PROCESS**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
3.1 Project Team, Financial Control Responsibilities &Tasks during: • Inception, Design Development, Tendering, Construction, Handover, Operations & Maintenance *(Identify and assign Who does What and When)* 3.2 Communicate Project Stakeholders' Financial Control Responsibilities & Tasks during: • Inception, Design Development, Tendering, Construction, Handover, Operations & Maintenance	Knowledge in: • Financial planning and control tasks that need to be carried out by the project stakeholder/parties in the activities within the project life cycle phase. • Communicating the financial control role, tasks and responsibilities to be carried out by the project's stakeholder/parties • Identifying the project's financial risk Skills: • Technical skills: - Allocating the financial control tasks and responsibilities to the project's stakeholder/parties - Structuring financial risk mitigation measures • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Analytical • Objective • Observant	• Risk analysis documents • Financial reports • Procurement strategy mapping documents	• Project financial & Physical S-Curve • Cash flow projection • Financial institution, Bank Negara and Security Commission guidelines. • Resources allocation • Human resources planning • Expert judgement

2.0 MANAGE DESIGN DEVELOPMENT PROCESS& PROJECT ESTIMATE

2.01 Establish Project Detail Design

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**2.01**	**DUTY:**	**ESTABLISH PROJECT DETAIL DESIGN & PROJECT ESTIMATE**
TASK NO:	**1**	**TASK:**	**PRODUCE DETAIL DESIGNS & SPECIFICATION**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Schematic Design: • Layout and Site Plans • Plans, sections & elevations • Isometric view 1.2 Detail Designs: • Elemental Design • Specifications (Materials, Workmanship, Testing and commissioning, plans and machinery) 1.3 Clash /Design Integration Analysis: • Architectural designs • Civil & Structural designs • Mechanical & Electrical designs • Interior Designs • Landscape designs	Knowledge in: • Planning, control and monitoring: • Design development process. • Project constraint. • Statutory approval process. • Construction sequence and methodology. • Functionality studies. • Cost-benefit analysis. • Change management. • Safety, health and environmental requirements. • Construction procurement methods and processes. Skills: • Technical skills: - Communicate the project's schematic design, detail design elements to the project stakeholders/parties - Identify buildability constraints - Clash Detection (CD)analysis • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Analytical • Objective • Observant	• Design guideline/standards • Statutory by-law. • Design standard. • Established need statements • Statutory & Local Authority requirement • Utility mapping • VE report	• Information and Communication Technology (ICT) Tools. • Project brief. • Design development process guidebook. • Statutory approval process document. • Client's requirements report. • Consultant scope of work document. • BIM Software • Alternative analysis • Benchmarking • Life cycle costing • Expert judgement

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**2.01**	**DUTY:**	**ESTABLISH PROJECT DETAIL DESIGN & PROJECT ESTIMATE**
TASK NO:	**2**	**TASK:**	**ESTABLISH DETAIL COST ESTIMATE**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
2.1 Elemental Cost Estimate: • Work Breakdown Structure • Elemental Quantities • Built-Up Rates • Estimating • Detail cost estimate 2.2 Elemental Cost Analysis: • Building Elemental Cost Breakdown • Cost/Gross Floor Area (GFA) • Element Unit Quantity • Element Unit Cost • Others, etc.	Knowledge in: • Work breakdown structure • Construction work programming • Method statement. • Statutory outgoing charges. • Procurement methods. • Resources allocation. • Land cost, acquisition cost, eviction cost and land conversion cost. • Financing charges. Skills: • Technical skills: - Project elemental breakdown - Quantification/measurement using Standard Method of Measurement (SMM) - Build-up rates - Elemental Cost Analysis (ECA) • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium Attitude: • Ethical • Analytical • Objective • Observant	• Bills of Quantities (BQ) • Method statements • Elemental Cost Analysis (ECA) • Established estimated data • Life cycle costing	• Programming/planning software. • Cost estimates. • Schedule of rates • Quotations. • Contingencies reserve

2.02 Establish Project Quality Planning and Control Process

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**2.02**	**DUTY:**	**ESTABLISH PROJECT QUALITY PLANNING & CONTROL PROCESS**
TASK NO :	**1**	**TASK:**	**DEVELOP PROJECT QUALITY MANAGEMENT PLAN**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Project Quality Policy: • Policy Quality Statement 1.2 Risk Assessment Methodology • Quality risk analysis • Quality Audits (QLASSIC, CONQUAS, etc.) 1.3 Quality Risk Planning Process:	Knowledge in: • Quality Assurance and Quality Control (QA/QC) • Quality Audit Systems - Quality Management System (QMS) and Quality Implementation Plan (QIP) requirements - Process mapping/mind mapping activities - Quality risk assessment - Quality team/structure - Contents of Project Quality Plan (PQP) - COPQ (Cost of poor quality) Skills: • Technical skills: - Developing Quality Compliance Checklist - Review PQP/Document - Motivate/guide project stakeholders/parties towards quality targets - Setting quality target/objectives - Quality coaching/facilitation • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Analytical • Objective • Observant	• Quality Assurance and Quality Control (QA/QC) Documents • Organisation standard operating procedure • Contractual documents	• Project Quality Management System • ISO9001 • Quality Assessment System in Construction (QLASSIC) • Quality Compliance Checklist • Inspections • CIS 7

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**2.02**	**DUTY:**	**ESTABLISH PROJECT QUALITY PLANNING & CONTROL PROCESS**
TASK NO :	**2**	**TASK:**	**ORGANISE QUALITY MONITORING SYSTEM/ QUALITY ASSURANCE**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
2.1 Project Stakeholders' Quality Monitoring & Control Responsibilities & Tasks during the project's Inception, Design Development, Tendering, Construction, Handover, Operations & Maintenance Stages *(Identify and assign Who does What and When)* 2.2 Communicate Project Stakeholders' Quality Monitoring Responsibilities & Tasks during the project's Inception, Design Development, Tendering, Construction, Handover, Operations & Maintenance Stages	Knowledge in: • Operationalising/structuring Quality Implementation Plan (QIP), Quality Assurance and Quality Control (QA/QC), and Quality Audit Systems implementation: - Establishing team/ structure/ responsibilities/ deliverables - QA/implementation framework - Quality communication structure - Assigning responsibilities of different parties - Promoting appreciation of QA/QC (audit, specifications, drawings, submission/approval, progress, etc.) Skills: • Technical skills: - Developing Health & Safety Compliance - Evaluating/review PQP Document - Setting quality target/objectives - Motivate/guide project parties towards quality targets - Quality coaching/facilitation • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills - Facilitation/coaching skills Attitude: • Ethical • Analytical • Objective • Observant	• Quality Assurance and Quality Control (QA/QA) Documents • Project quality plan • Inspection test plan • Contract documents	• Project Quality Management System • Quality Assurance and Quality Control (QA/QA) Documents • ISO9001 • CIS7 • Quality Assessment System in Construction (QLASSIC) • Quality Compliance Checklist • Inspection

2.03 Establish Project Health and Safety Planning and Control Process

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**2.03**	**DUTY:**	**ESTABLISH PROJECT HEALTH AND SAFETY PLANNING & CONTROL PROCESS**
TASK NO.:	**1**	**TASK:**	**DEVELOP CONSTRUCTION HEALTH & SAFETY PLAN**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Health & Safety Policy: • Health & Safety Policy Statement 1.2 Health & Safety Risk Assessment: • Identify project health & safety risks • Project health & safety risk analysis • Project health & Safety Audits (SHASSIC, etc.) 1.3 Health & Safety Planning Process: • Control of health hazards • Control of safety hazards • Health & safety checklists	Knowledge in: • OSH – Legal requirement/Hazard Identification, Risk Assessment and Risk Control (HIRARC), Building Operations And Works Of Engineering Construction (BOWEC) • Quality Audit Systems - Quality Management System (QMS) requirements - Process mapping/mind mapping activities - Health & safety risk assessment - Health & safety team/structure - Contents of OSH policy Skills: • Technical skills: - Reviewing HIRARC document - Developing Health & Safety Compliance Checklist - Setting health and safety targets/objectives - Motivate/guide project stakeholders/parties towards health and safety targets - Health and safety coaching/facilitation • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Analytical • Objective • Observant	• HIRARC Documents • Health & Safety plan • Health & Safety Implementation Plan (HSIP)	• Project Health & Safety Management System • ISO45001 • Safety and Health Assessment System in Construction (SHASSIC) • CIS 10 • Risk analysis

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**2.03**	**DUTY:**	**ESTABLISH PROJECT HEALTH AND SAFETY PLANNING & CONTROL PROCESS**
TASK NO :	**2**	**TASK:**	**ORGANISE HEALTH & SAFETY ASSURANCE PROCESS**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
2.1 Project Stakeholder's Health & Safety Responsibilities Mapping: *(Identify and assign Who does What and When)* 2.2 Communicate Project Stakeholders' on Quality Monitoring Responsibilities & Tasks	Knowledge in: • Operationalising/structuring Health & Safety Management, and Audit implementation, Building Operations And Works Of Engineering Construction (BOWEC): - Establishing team/ structure/ responsibilities/ deliverables - HIRARC implementation framework - Health & safety communication structure - Assigning health and safety responsibilities of different parties - Promoting appreciation of HIRARC (audit, specifications, submission/approval, progress, etc.) Skills: • Technical skills: - Evaluating/review HIRARC Document - Setting health & safety targets/objectives - Motivate/guide project parties towards quality targets - Health & safety coaching/facilitation • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills - Facilitation/coaching Attitude: • Ethical • Analytical • Objective • Observant	• HIRARC Documents • Contract document • Health and safety documents and checklists	• Project Health & Safety Management System • ISO45001 • Safety and Health Assessment System in Construction (SHASSIC) • Environmental Health & Safety Compliance Checklist • CIS 10 • Safety briefing

2.04 Establish Environmental Planning and Control Process

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**2.04**	**DUTY:**	**ESTABLISH PROJECT ENVIRONMENTAL PLANNING & CONTROL PROCESS**
TASK NO:	**1**	**TASK:**	**DEVELOP ENVIRONMENTAL MANAGEMENT PLAN**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Environmental Protection Policy: • Environmental Protection Policy Statement • Roles of Project Stakeholders in maintaining project's environmental protection 1.2 Project Environmental Protection Assessment • EIA: - Environmental risks - Environmental risks analysis - Environmental risks mitigation - Environmental Audits (MyCREST, GBI, GreenRE, etc.) 1.3 Establish Project Environmental Protection planning Process: • Design and construction • Environmental control procedures • Environmental protection control procedures	Knowledge in: • Environmental Management System (EMS) • EMS Legal Framework • Environmental Impact Assessment (EIA) • Sustainable built environment and sustainable construction practices • Environmental Management System (EMS) requirements - Process mapping - Environmental Impact Assessment (EIA) - EMS team/structure - Contents of EMS policy Skills: • Technical skills: - Reviewing HIRARC and BOWEC document - Developing environmental compliance requirement checklist - Setting health and safety targets/objectives - Motivate/guide project stakeholders/parties towards health and safety targets - Health and safety coaching/facilitation • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Analytical • Objective	• ISO45001 • Environmental Monitoring Plan • EIA report	• Project Environmental Management System (EMS) document • MyCREST, Green Building Index (GBI), GreenRE • Environmental compliance requirement checklist • CIS 19 • Risk analysis

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**2.04**	**DUTY:**	**ESTABLISH PROJECT ENVIRONMENTAL PLANNING & CONTROL PROCESS**
TASK NO:	**2**	**TASK:**	**ORGANISE ENVIRONMENTAL PROTECTION ASSURANCE PROCESS**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
2.1 Stakeholder's Environmental Protection Responsibilities Mapping during Inception, Design Development, Tendering, Construction, Handover, Operations & Maintenance Stages *(Identify and assign Who does What and When)* 2.2 Communicate Project Stakeholder's Environmental Protection& Monitoring Responsibilities & Tasks during Inception, Design Development, Tendering, Construction, Handover, Operations & Maintenance Stages	Knowledge in: • Operationalising/structuring Health & Safety Management, and Audit implementation: • Environmental Management System (EMS) - Establishing team/ structure/ responsibilities/ deliverables - EMS implementation framework - EMS communication structure - Assigning EMS responsibilities of different parties - Promoting appreciation of EMS (audit, specifications, submission/approval, progress, etc.) Skills: • Technical skills: - Evaluating/review EMS Document - EMS targets/objectives - Motivate/guide project parties towards EMS targets - EMS coaching/facilitation • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills - Facilitation/coaching Attitude: • Ethical • Analytical • Objective • Observant	• ISO45001 • Project Environmental Management System (EMS) document	• MyCREST, Green Building Index (GBI), GreenRE • Environmental compliance requirement checklist • CIS 19

2.05 Conduct Value Management

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**2.05**	**DUTY:**	**ADMINISTER VALUE MANAGEMENT**
TASK NO:	**1**	**TASK:**	**ANALYSE PROJECT VALUE**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Value Management Assessment (VA)/Value planning • Establish project scope and objective • Function analysis • Determine value mismatch • VM Change Proposal • Establish value chain 1.2Value engineering • Function analysis • Design simplification • Standardisation • Construction efficiency • Modular/pre-assembly design • Site Planning 1.3Value Analysis:/ Value review • Function analysis • Design simplification • Standardisation • Construction efficiency • Modular/pre-assembly design • Site Planning	Knowledge in: • Value management process and methodology • Capturing lesson learnt • Project analysis Skills: • Technical skills: - Establish verb and noun function analysis statement. - Classify assign cost to the function. • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills - Facilitation/coaching Attitude: • Ethical • Analytical • Objective • Observant	• Established Value management report • National VM guide • Established government guide & Cost policy • Established data • VA report • VE report	• Value Management Workshop document • Fast Diagram • Functional analysis • Cost model • Energy model • Space function analysis model • Benchmarking • Job Plan tools • Facilitated workshop • Brainstorming • Value mismatch • Alternative, pair & comparison analysis

2.06 Obtain Authorities Approval

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**2.06**	**DUTY:**	**OBTAIN AUTHORITIES APPROVAL**
TASK NO:	**1**	**TASK:**	**IDENTIFY AUTHORITIES REQUIREMENTS & SUBMISSIONS**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Statutory Requirements And Approvals: • Planning Permission • Development Orders (D.O.) • Testing & Commissioning • Certificate of Completion and Compliance (CCC) - Plumbing Codes - Safety & Health Codes	Knowledge in: • Project subject matter. • Statutory requirements. • Process flow and procedure Skills • Technical skills: - Interact/responding to authorities' concern. - Establish working relationship with authorities. - Collate requirements. • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Analytical • Objective • Diplomatic	• Uniform Building By Laws (UBBL) • Project milestones • Local authority requirement • Utility service provider registration (TNB, IWK JBA etc...) • Specification standards	• Public relations tools • Planning permission documents. • Acts and Regulations • Checklist • Submission form • Inspection

3.0 EXECUTE TENDER

3.01 Tender Documentation

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**3.01**	**DUTY:**	**TENDER THE PROJECT**
TASK NO:	**1**	**TASK:**	**TENDER DOCUMENTATION**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Tender Document Preparation: • Invitation to Tender • General Conditions • Form of Tender • Form of Contract • Specifications • Drawings • Bills of Quantities • Schedule of Rates • Notice of Non-collusion • Special Instructions	Knowledge in: • Type of contract. • Contract law. • Industrial practices procedures. • Selection of tenderer. • Quality management system requirements. Skills • Technical skills: - Leading project team. - Pre-Qualification. - Incorporation of QMS, HIRARC and EMS in tender documents. • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Analytical • Objective	• Request for Proposal (RFP) • Tender documents, • Project drawings • Specifications • Organisation process/procedure	• Procurement method • Tendering procedure/guidelines • Quality Assurance/Quality Control strategy. • Project strategy. • Procurement strategy. • Contractors' profiles. • Site investigation/visit. • Project budget.

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**3.01**	**DUTY:**	**TENDER THE PROJECT**
TASK NO:	**2**	**TASK:**	**TENDERING THE PROJECT**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
2.1 Soliciting Bids • Invitation to tender 2.2 Tendering • Open tender • Pre-Qualification • Selective Tendering Serial Tendering • Negotiated Tender	Knowledge in: • Type of conditions of contract. • Tendering procedures. • Contractual arrangement. Skills • Technical skills: - Tendering administration • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Analytical • Objective	• Invitation to tender • Tendering procedure documents • Tender reports. • Government tendering procedure • Organisation process procedure	• Drawings. • Specification. • Procurement strategy.

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL6)			
DUTY NO:	**3.01**	**DUTY:**	**TENDER THE PROJECT**
TASK NO:	**3**	**TASK:**	**EVALUATE & AWARD TENDER**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
3.1 Evaluate Tender • Financial evaluation • Technical evaluation • Project experience • Financial standing/capability • Credit Facilities • Project staff qualifications and experience • Project in hand 3.2 Award the Tender • Contractor/Supplier Selection and Notification • Negotiation • Pre-Award Meeting • Letter Of Intent • Contract Document	Knowledge in: • Construction methodology and sequence of operation. • Tender evaluation techniques. • Cost evaluation. • Legal practices. • Industrial practices. • Standard performance. • Programming techniques. Skills • Technical skills: - Tender evaluation. • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Analytical • Objective • Decisive	• Tendering analysis • Tender evaluation report	• Procurement method, • Quality Assurance/Quality Control strategy. • Project and procurement strategy documents. • Contractors' profiles. • Site investigation/visit reports. • Project budget.

4.0 PROJECT MONITORING AND CONTROL

4.01 Monitor and Control Project Progress

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**4.01**	**DUTY:**	**MONITOR & CONTROL THE PROJECT PROGRESS**
TASK NO:	**1**	**TASK:**	**REPORT PROJECT PROGRESS**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Project Progress Reporting: • Mobilisation • Progress records • Change Orders • Verification that the work was performed • Delays • Variations	Knowledge in: • Work process. • Contract administration. • Project planning. • Divergence forecast. Skills • Technical skills: - Project monitoring skills. - Forecast progress trends - Identify divergence consequences • Soft skills management: - Creating positive working relationship and environment - Communication using written, oral and digital medium - Team leadership skills Attitude: • Ethical • Analytical • Objective • Decisive • Observant	• Contract document. • Method Statements • Progress reports.	• Work breakdown Structure (WBS) • Master Programme, Mid-Term Programme, Short-Term Programme. • Project Planning software. • Variance analysis • Performance review • Schedule compression/crashing • Resources levelling

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**4.01**	**DUTY:**	**MONITOR & CONTROL THE PROJECT PROGRESS**
TASK NO:	**2**	**TASK:**	**ANALYSE & CONTROL PROJECT PROGRESS**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
2.1 Project Progress Monitoring: • Progress Reports • Progress Meetings • Operational Audits • As-built Information 2.2 Project Progress Control: • Re-Planning • Change Orders • Implications to Payments and Claims • Extension of Time • Lessons Learnt	Knowledge in: • Work process. • Contract administration. • Project planning. • Industrial practices. • Construction techniques. Skills • Technical skills: - Identify milestones and critical path. - Determine workflow system. - Establish trade inter-phasing. - Modify schedule to suit completion date. • Soft skills management: - Creating positive working relationship and environment - Communication using written and oral medium - Team leadership skills Attitude: • Ethical • Analytical • Objective • Decisive • Observant	• Master Programme, Mid-Term Programme, Short-Term Programme. • Contract document. • Method Statements • Progress reports.	• Work breakdown Structure (WBS) • Project Planning software. • Variance analysis • Performance review • Expert judgement

4.02 Monitor & Control Project Finances/Cash Flow

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**4.02**	**DUTY:**	**MONITOR & CONTROL THE PROJECT CASH FLOW**
TASK NO:	**1**	**TASK:**	**MONITOR PROJECT CASH FLOW**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Report Project Cash Flow Income & Expenditure: • Amount • Timing • Delays • Outstanding	Knowledge in: • Accounting techniques. • Contract administration. • Work process. • Construction cost characteristics. Skills • Technical skills: - Comprehend cash flow statement. • Soft skills management: - Creating positive working relationship and environment - Communication using written and oral medium - Team leadership skills Attitude: • Ethical • Analytical • Objective • Decisive • Observant	• Contract documents. • Sub-contract documents. • Project cash flow reports	• Cash flow report. • Work program. • Progress report

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**4.02**	**DUTY:**	**MONITOR & CONTROL THE PROJECT CASH FLOW**
TASK NO:	**2**	**TASK:**	**CONTROL PROJECT CASH FLOW**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
2.1 Cash Flow Analysis: • Cash Flow Surplus/Deficits • Financing shortfalls 2.2 Cash Flow Control: • Re-Planning Cash Flow • Implications to project progress • Lessons Learnt	Knowledge in: • Accounting and financing techniques. • Contract administration. • Work process. • Construction costing. • Value engineering. Skills • Technical skills: - Detect pattern anomaly. - Detect price variations. - Analyse claims payment data. • Soft skills management: - Creating positive working relationship and environment - Communication using written and oral medium - Team leadership skills Attitude: • Ethical • Analytical • Objective • Decisive • Observant	• Project budget report. • Contract document.	• Cost estimates. • Quotations. • Variation orders. • Planning software.

4.03 Administer Construction Contract

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**4.03**	**DUTY:**	**ADMINISTER PROJECT LEGAL & CONTRACT REQUIREMENTS, CHANGES & INFORMATION MANAGEMENT**
TASK NO:	**1**	**TASK:**	**ADMINISTER THE CONSTRUCTION CONTRACT , CHANGES & INFORMATION MANAGEMENT**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Manage the Construction Contract, rights and responsibility of contracting parties. • Contract Documents • Contract Sum • Variations • Extension of Time and Monetary Claims • Payments and Certificates • Subcontracting • Commencement and Completion • Determination of Contractor's Employment before Completion • Any other clauses 1.2 Establish Dispute Resolution Mechanism: • Litigation • Arbitration. • Mediation. • Conciliation. • Negotiation. • Facilitation.	Knowledge in: • Contract administration: - Variations - Extension of Time and Monetary Claims - Payments and Certificates - Subcontracting - Commencement and Completion - Determination of Contractor's Employment before Completion - or any other clauses Skills • Technical skills: - Comparative analysis or various forms of contract - Claims management. • Soft skills management: - Creating positive working relationship and environment - Communication using written and oral medium Attitude: • Ethical • Analytical • Objective • Observant	• Standard forms of contract.	• JCT • Bespoke contracts • FIDIC • PAM • ARCA • ICE • CIDB

4.04 Monitor and Control Quality Compliance

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**4.04**	**DUTY:**	**MONITOR & CONTROL QUALITY COMPLIANCE**
ASK NO.:	**1**	**TASK:**	**REPORT QUALITY COMPLIANCE& AUDIT**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Report Quality Compliance Monitoring & Reporting: • Earthworks • Building Works: - Sub-Structure - Super-structure - Roof - Floors - Walls - Services - Finishes - External Works • Infrastructure Works: - Roads - Drains - Fencing & Gate - Landscaping - Signage - Water Reticulation - Electrical Supply/Sub-station - Sewerage 1.2Quality Audits: • Quality Audits (QLASSIC, CONQUAS, etc.)	Knowledge in: • Monitoring & review of quality compliance • Quality audit systems procedure (QLASSIC, CONQUAS, etc) Skills • Technical skills: - Review quality compliance/target achievement - Computation of quality audit scores - Non-conformance resolution • Soft skills management: - Creating positive working relationship and environment - Communication using written and oral medium Attitude: • Ethical • Analytical • Objective • Observant	• Quality Assurance and Quality Control (QA/QA) Documents • ISO9001 • Quality audit/assessment reposts	• Project Quality Management System • Quality Assessment System in Construction (QLASSIC) • QA/QC documents • Quality Compliance Checklist • CIS7

4.05 Monitor and Control Health and Safety Compliance

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**4.05**	**DUTY:**	**MONITOR & CONTROL PROJECT'S HEALTH AND SAFETY COMPLIANCE**
TASK NO:	**1**	**TASK:**	**MONITOR HEALTH & SAFETY COMPLIANCE& AUDIT**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Report Project Health &Safety Compliance: • Health & safety management procedures • Health & Safety Manager • Health & Safety Committee • Health &Safety performance/achievements: - Workforce welfare - Wellbeing - Occupational health management - Reportable occupational health issues - Hazardous substances - Personal protective equipment - Further detail on statutory regulation - Health & safety work instructions and provision - Project site hazard, risk and harm - Design and construction hazard - Health & safety documentation and files - Welfare facilities 1.2 Health & Safety Audits: • Safety and Health Assessment System in Construction (SHASSIC)	Knowledge in: • Monitoring & review of Health & Safety compliance • Health & Safety systems procedure (SHASSIC) Skills • Technical skills: - Review Health & Safety compliance/target achievement - Computation of Health & Safety audit scores - Health & Safety non-conformance resolution • Soft skills management: - Creating positive working relationship and environment - Communication using written and oral medium Attitude: • Ethical • Analytical • Objective • Observant	• HIRARC Documents • ISO45001 • Health and safety assessment/audit reports	• Project Health & Safety Management System • Safety and Health Assessment System in Construction (SHASSIC) • Environmental Health & Safety Compliance Checklist • CIS 10

4.06 Monitor and Control Environmental Requirement Audit & Compliance

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**4.06**	**DUTY:**	**MONITOR & CONTROL ENVIRONMENTAL REQUIREMENT COMPLIANCE**
TASK NO:	**1**	**TASK:**	**REPORT ENVIRONMENTAL REQUIREMENT AUDIT & COMPLIANCE**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Report environmental requirement compliance: • Environmental manager representative • Training, communications, documentation and control mechanism • Environmental implementation control: - Land use - Existing site dereliction - Natural habitat destruction - Use of natural resources (water and air) - Pollution emission (water, and air) - Waste - Comfort disturbance - Health and safety - Energy consumption - Environmental work instructions and provision 1.2 Environmental Audits: • MyCREST, Green Building Index (GBI), GreenRE, etc.	Knowledge in: • Monitoring & review of Environmental Management System (EMS) compliance • EMS systems procedure (MyCREST, GBI, GreenRE, etc.) Skills • Technical skills: - Review EMS compliance/target achievement - Computation of EMS audit scores - EMS non-conformance resolution • Soft skills management: - Creating positive working relationship and environment - Communication using written and oral medium Attitude: • Ethical • Analytical • Objective • Observant	• ISO45001 • Environmental compliance audit/assessment reports	• Project Environmental Management System (EMS) document • MyCREST, Green Building Index (GBI), GreenRE • Environmental compliance requirement checklist • CIS 19 • Environmental Sampling

5.0 ADMINISTER PROJECT HANDOVER

5.01 Testing and Commissioning

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**5.01**	**DUTY:**	**PROJECT HANDOVER**
TASK NO:	**1**	**TASK:**	**TESTING & COMMISSIONING**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Completing the Work • Preliminary inspection • Contractor's Testing &Start-up • Preliminary Defect List • Preliminary inspection • Inspection • Testing &Start-up • Final Defect list • Handing over Application Submission	Knowledge in: • Project elements for testing & commissioning • Testing &commissioning procedure • Approval requirements • Building components operations and maintenance • Contractual implications of testing and commissioning • Warranties Skills • Technical skills: - Identify defects/non-compliance Report. - Element rectification process. - Measure and quantify non-compliance and/or non-completion. • Soft skills management: - Creating positive working relationship and environment - Communication using written and oral medium Attitude: • Ethical • Analytical • Objective	• Contract document. • Acts and legislations. • Handover reports. • As built drawings. • Specification • Design consultant recommendation • Schedule of making good defect	• Operation and maintenance manual. • Defects list. • Inspection • Method statement

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**5.01**	**DUTY:**	**PROJECT HANDOVER**
TASK NO:	**2**	**TASK:**	**MANAGE PRACTICAL COMPLETION**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
2.1 Work • Pre-handover Inspections • Handover Inspections • Remedial • Testing &Commissioning • Operating and Maintenance Manual Submission • As-Built Drawings • Warranty Documentation • Defect list • Performance Bond • Liquidated Damages • Penultimate Payments	Knowledge in: • Statutory requirements. • Contractual requirements. • Operation and maintenance requirements • As Built Drawings. Skills • Technical skills: - Coordinate handing-over process. - Compiling and recording As Built Drawings - Authorities, client and end user liaison - Total handing-over package delivery. • Soft skills management: - Creating positive working relationship and environment - Communication using written and oral medium Attitude: • Ethical • Analytical • Objective	• Contract document. • Pre-handover assessment reports • Testing and commissioning reports • Warranty documents • Handover checklist reports • List deliverables	• Quality, Safety, Health and Environmental plans and records. • Acts and legislations. • Records of warranties. • Operational and maintenance manual. • Conduct O& M Training • Register defect list • Conduct joint inspections • Record T & C result • Schedule of maintenance

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**5.01**	**DUTY:**	**PROJECT HANDOVER**
TASK NO:	**3**	**TASK:**	**MANAGE PRACTICAL COMPLETION DEFECTS DURING DEFECTS LIABILITY PERIOD (DLP)**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
3.1 Issues during DLP • Type of defects - Patent defect - Latent defect - Defect/ shrinkage and/or fault identification • Processes - Issuance of Schedule of Defects - Inspection	Knowledge in: • Defects and quality assessment system Skills • Technical skills: - Administering defects rectification process • Soft skills management: - Creating positive working relationship and environment - Communication using written and oral medium Attitude: • Ethical • Analytical • Objective	• Project pre-handover reports. • Defects resolution reports • As built drawings • Minutes meeting	• Operation and maintenance manual. • Defects list • Expert judgement • Schedule of making good defects • Joint inspection • Close out

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**5.01**	**DUTY:**	**PROJECT HANDOVER**
TASK NO.:	**4**	**TASK:**	**PROJECT CLOSEOUT, LESSON LEARNED ,FEEDBACK FOR CONTINUOUS IMPROVEMENT & FINAL ACCOUNT**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
4.1 Close Out & Final Account • Post-Performance Evaluation • Termination Notification • Documentation • Titles To Major Equipment Incorporated In The Facility • Inspection & Acceptance Record • Other Typical Deliveries • Release of Liens • Close Account • Certification - Issuance of Certificate of Making Good Defects - Issuance of Final Certificate	Knowledge in: • Contractual obligation matters. • Statutory requirements. • Cost and time management. Skills • Technical skills: - Coordinate and compile the various project accounts. - Negotiate the statement of account with the contractors. - Communicate and present the final statement of account. • Soft skills management: - Creating positive working relationship and environment - Communication using written and oral medium Attitude: • Ethical • Analytical • Objective	• Project Final Account • Project close-out report	• MOS • Drawing standards • Operations and Maintenance Training (O&M)

6.0 ESTABLISH OPERATIONS & MAINTENANCE PLAN

6.01 Establish Operations Plan & Programme

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**6.01**	**DUTY:**	**ESTABLISH OPERATIONS AND MAINTENANCE PLAN**
ASK NO.:	**1**	**TASK:**	**ESTABLISH OPERATIONS PLAN & PROGRAMME**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Establish Facility Operations Plan: • Facility Operations aim, objectives and activities • Operations organization and administration • Facility operations monitoring and assessment process • Operations human resource establishment • As built drawing/plan • Operation manual	Knowledge in: • Building/facilities operations, equipment and systems configuration • Hard and soft building/facility management • Life cycle costing • Facilities management. Skills: • Technical skills: - Analyse and evaluate on the operation and maintenance facilities - Building/facilities operations set-up • Soft skills management: - Communication using written and oral medium Attitude: • Ethical • Analytical • Objective	• Building/facilities management documents • Operations & Maintenance Manual and related documents	• Equipment operations manual Computerized maintenance management system (CMMS)

6.02 Establish Facility Maintenance Plan

OCCUPATION: CERTIFIED CONSTRUCTION PROJECT MANAGEMENT (LEVEL 6)			
DUTY NO:	**6.02**	**DUTY:**	**ESTABLISH OPERATIONS AND MAINTENANCE PLAN**
ASK NO:	**1**	**TASK:**	**ESTABLISH FACILITY MAINTENANCE PLAN PROGRAM**

KEY PROCESSES/CRITERIA	ENABLING REQUIREMENTS (KNOWLEDGE, SKILLS, AND ATTITUDE)	EVIDENCE GUIDE	TOOLS/EQUIPMENT/MATERIALS
1.1 Establish Facility Maintenance Plan: • Facility maintenance aim, objectives and activities • Maintenance organization and administration • Facility operations monitoring and assessment process • Preventative, periodic and corrective maintenance documentation and inventory • Maintenance human resource establishment and training • Maintenance work control system • Equipment Performance Monitoring • Engineering Support Procedures and Documentation • Maintenance manual	Knowledge in: • Building/facilities operations, equipment and systems maintenance process • People, place and process elements of the building/facility • Types of maintenance. • Computerized maintenance management system (CMMS) • Latent and patent defects • Planned and corrective maintenance • Life cycle costing, Skills: • Technical skills: - Identify, analyse and evaluate the facilities that needs to be managed - Setting up the facilities management system • Soft skills management: - Communication using written and oral medium Attitude: • Ethical • Analytical • Objective	• Building maintenance documents	• Equipment operations manual • Computerized maintenance management system (CMMS)