



OCCUPATIONAL FRAMEWORK

SECTION F: CONSTRUCTION

DIVISION 43: SPECIALIZED CONSTRUCTION ACTIVITIES

Department Of Skills Development
Ministry Of Human Resource, Malaysia

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ABSTRACT

An Occupational Framework (OF) is the outcome of the analysis conducted in identifying the work scope of the occupational areas in terms of competencies. It is used to analyse skilled manpower competency requirements for the industry. The OF aims to provide an overall view of the industry's Occupational Structure (OS) and identify skills gaps, critical job titles and Occupational Descriptions (OD) that would assist in further understanding the job requirements of the various occupations in the industry. Department of Skills Development (DSD) is the custodian of this document, where the OF identified the suitable occupational areas which either require development of skills training programmes or the review and enhancement of existing skills training programmes. The OF for Specialized construction activities are based on the 2 digit Malaysia Standards Industrial Classification (MSIC) 2008 under Section F – Construction, Division 43 – Specialized construction activities. This document is divided into several chapters, Chapters 1 includes the objectives, scope and justification of the OF development for the Specialized construction activities. Chapter 2 includes the industry overview highlighting the definition and scope of the industry, stakeholders, legislation, initiatives and market intelligence of the industry. Chapter 3 explained the methodology used in the OF development such as qualitative analysis through brainstorming discussion sessions. Chapter 4 discussed the findings from the focus group discussion conducted that be translated into the Occupational Structure, Occupational Description, Jobs in Demand, Competencies in Demand and Emerging Skills. Lastly, Chapter 5 concluded the total number of job area identified is 71 with 560 job titles and 67 job titles identified as critical job titles and also recommended the National Occupational Skills Standard (NOSS) or National Competency Standard (NCS) that should be developed based on the jobs in demand identified in this OF and the competencies in demand plus emerging skills that should be included in the NOSS and skills training curriculum under DSD.

ABSTRAK

Kerangka Pekerjaan (OF – *Occupational Framework*) ialah hasil analisis yang dijalankan dalam mengenal pasti skop kerja bidang kerja dari segi keterampilan. Ia digunakan untuk menganalisis keperluan keterampilan tenaga kerja mahir untuk industri. OF bertujuan memberikan pandangan keseluruhan mengenai Struktur Pekerjaan (OS – *Occupational Structure*) industri dan mengenal pasti jurang kemahiran, jawatan pekerjaan kritikal dan Deskripsi Pekerjaan (OD – *Occupational Descriptions*) yang akan membantu dalam memahami lagi keperluan kerja pelbagai pekerjaan dalam industri. Jabatan Pembangunan Kemahiran (JPK) ialah jabatan yang bertanggungjawab dalam membangunkan dokumen ini yang OF mengenal pasti bidang pekerjaan yang sesuai sama ada memerlukan pembangunan program latihan kemahiran atau kajian semula dan peningkatan program latihan kemahiran yang sedia ada. Aktiviti Pembinaan Khas adalah berdasarkan Klasifikasi Perindustrian Piawaian Malaysia (MSIC – *Malaysia Standard Industrial Classification*) 2008 di bawah Seksyen F – Pembinaan, Bahagian 43 – Aktiviti Pembinaan Khas. Dokumen ini dibahagikan kepada beberapa bab iaitu, Bab 1 merangkumi objektif, skop dan justifikasi pembangunan untuk aktiviti pembinaan khas. Bab 2 merangkumi gambaran industri yang menjelaskan mengenai definisi dan skop industri, pihak berkepentingan, perundangan, inisiatif dan kecerdasan pasaran. Bab 3 menjelaskan metodologi yang digunakan dalam pembangunan seperti analisis kualitatif melalui sesi perbincangan berkumpulan. Bab 4 pula membincangkan penemuan daripada perbincangan kumpulan fokus yang diterjemahkan ke dalam Struktur Pekerjaan, Deskripsi Pekerjaan, Pekerjaan yang Diperlukan, Kemahiran yang Diperlukan dan Kemahiran Baru Muncul. Akhirnya, Bab 5 menyimpulkan jumlah bidang kerja yang dikenal pasti, iaitu 71 bidang dengan 560 jawatan pekerjaan dan 67 jawatan pekerjaan yang dikenal pasti sebagai jawatan pekerjaan kritikal dan juga mengesyorkan Standard Kemahiran Pekerjaan Kebangsaan (SKPK) atau Standard Keterampilan Kebangsaan (SKK) yang perlu dibangunkan berdasarkan pekerjaan yang diminta yang dikenal pasti dalam ini dan yang kemahiran dalam permintaan serta kemahiran baharu yang perlu dimasukkan ke dalam kurikulum latihan SKPK dan kemahiran di bawah JPK.

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LIST OF ABBREVIATION

3D	Dirty, dangerous and difficult
ABM	<i>Akademi Binaan Malaysia</i>
ACEM	Association of Consulting Engineers Malaysia
BEM	Board of Engineers Malaysia
BQSM	Board of Quantity Surveyors Malaysia
CBT	Competency Based Training
CIASST	Centre for Instructor and Advance Skill Training
CIDB	Construction Industry Development Board
CITP	Construction Industry Transformation Programme
COL	Critical Occupational List
DOSH	Department of Occupational Safety and Health
DOSM	Department of Statistics Malaysia
DSD	Department of Skills Development
GDP	Gross Domestic Product
IBS	Industrial Building System
ILP	Institut Latihan Perindustrian
IoT	Internet of Things
ISIC	International Standard Industrial Classification
JPK	<i>Jabatan Pembangunan Kemahiran</i>
LAM	<i>Lembaga Arkitek Malaysia</i>
MIDA	Malaysia Investment Development Authority
MITI	Ministry of International Trade and Industry
MOSQF	Malaysia Occupational Skills Qualification Framework
MOW	Ministry of Works
MQA	Malaysian Qualification Agency
MQF	Malaysia Qualifications Framework
MSIC	Malaysia Standard Industrial Classification
NCS	National Competency Standards
NOSS	National Occupational Skills Standard
OA	Occupational Area
OD	Occupational Description
OF	Occupational Framework
OS	Occupational Structure
PhD	Doctor of Philosophy
PWD	Public Work Department
QA	Quality Assurance
QC	Quality Control
SHE	Safety, Health and Environment
REHDA	Real Estate and Housing Developers' Association Malaysia
SKK	<i>Standard Keterampilan Kebangsaan</i>

SKPK	<i>Standard Kemahiran Pekerjaan Kebangsaan</i>
SSM	<i>Suruhanjaya Syarikat Malaysia</i>
TVET	Technical and Vocational Education and Training
UBBL 1984	Uniform Building By-Laws 1984
UK	United Kingdom

GLOSSARY

3R	3R (as in letter R) are the basic skills taught in schools: reading, writing and arithmetic.
Construction	Process that consists of building or assembling of infrastructure.
Ceiling joist	One of a series of parallel framing members (not part of a truss) used to support ceiling loads and supported in turn by larger beams or bearing walls.
Cement	The grey powder that is the "glue" in concrete.
Concrete	A mixture of cement, sand, gravel, and water.
Control joint	Tooled, straight grooves made in concrete flatwork to "control" where the concrete should crack.
Ducts	The air conditioning system. Usually round or rectangular metal or flexible pipes installed for distributing warm or cold air from the air handler to rooms in the home.
Industrialised Building System	IBS is a term used for a technique of construction where components are manufactured in a controlled environment, either at site or off site, placed and assembled into construction works.
Joint	The location between the touching surfaces of two members or components joined and held together by nails, glue, cement, mortar, or other means.
Occupational Structure	Distribution of occupations classified according to skill level.
Occupational Framework	Outcome of the occupational analysis process to identify the occupational structure of an industry.

CHAPTER 1: INTRODUCTION

1.1 Introduction

The construction sector is seen as one of the rapid growth sector in Malaysia. Based on the statistics released by the Construction Industry Development Board (CIDB), the construction sector has recorded the total number of project worth RM163 billion in year 2017 for both public and private sector¹. The value shows the decreasing from the total number of project RM252 billion recorded in year 2016. Therefore, it is a needed to review this sector to ensure that the sector continue to grow and contribute to the country's economy.

The construction sector falls under Section F: Construction in the Malaysia Standard Industry Classification 2008 (MSIC 2008). This section is divided into 3 division which are 41 – Construction of buildings; 42 – Civil engineering; and 43 – Specialized construction activities. The Specialized construction activities includes the construction of parts of the buildings and civil engineering works which are mostly carried out by subcontractors. These activities are usually specialized in one aspect common to different structures, requiring specialized skills or equipment.

This study discusses about the Specialized construction activities. This chapter starts with describing the problem statement, objective of study, scope of study and justification for MSIC 2008 section selection of the Occupational Framework (OF) especially for the Specialized construction activities industry.

¹ Construction Industry Development Board (CIDB). (2017). Annual Report 2017. Page 73

1.2 Problem Statement

To date, there are 160 National Occupational Skills Standard (NOSS) documents developed for Specialized construction activities. These NOSS documents are developed under the broad sector of building and construction. The occupational analysis last developed in 2015, under this broad sector covers four main groups mainly Demolition and site preparation; Electrical, plumbing and other construction installation activities; Building completion and finishing and Other specialized construction activities. However, the complete analysis which focuses on Specialized construction activities has yet to be conducted. Therefore, development of an occupational framework for specialized construction activities industry deemed necessary.

Furthermore, the analysis carried out in line with the section and divisions in MSIC 2008, provided a complete overview of the activities that are considered as specialised in the building and construction industry. There is also the need to review into the effects of IR4.0 on the existing job titles and its relevance for career development for each specialised activity. The OF developed includes the occupational structure, occupational description, jobs in demand and competencies in demand. This framework are beneficial for industry players and decision makers at the industry at large.

1.3 Objectives of Study

The objectives for the specialized construction activities industry are as follows:

- a) To propose Occupational Structure (OS) for specialized construction activities industry based on MSIC 2008;
- b) To identify the competencies in demand in the industry of specialized construction activities;
- c) To identify critical jobs for the specialized construction activities industry;
- d) To propose jobs title related to IR 4.0 in specialized construction activities; and
- e) To establish Occupational Descriptions (OD) for each job title based on latest industry OS.

1.4 Scope of Study

The target respondents chosen for this study is based on various organisational level in specialized construction activities industry in Malaysia. In order to gain an in depth understanding and making inference of the industry, both qualitative and quantitative research method applied. Document analysis, focus group discussion and survey methodology were the main focus in the data gathering information process. Primary data is obtained from engagement and discussion with panel experts as well as respondents from the survey. Secondary data is obtained from various sources including reports, books, journals and information obtained manually and electronically. The respondents for this study were only be those working with the Specialized construction activities industry registered with *Suruhanjaya Syarikat Malaysia* (SSM).

Based on the statistics of construction sector 2015 published by Department of Statistics Malaysia (DOSM), it was reported that about 15,228 companies registered under 2 digit MSIC 2008 division 43. The division are divided into 4 groups namely 431 – demolition and site preparation, 432 – electrical, plumbing and other construction installation activities, 433 – building completion and finishing and 439 – other specialized construction activities. The Specialized construction activities is a construction of parts of buildings and civil engineering works without responsibility for the entire project. It is usually specialized in one aspect common to different structures, requiring specialized skills or equipment.

This study embarked by undertaking mainly three steps methodology. Firstly, reviewing of documents available in trade journals, published government reports and relevant articles were done. This is be followed secondly, by focus group interviewing the pertinent senior industry representatives to gain insight of the industry. Finally, survey instrument items developed and validated were deployed to the industry.

1.5 Justification for Malaysia Standard Industrial Classification 2008 (MSIC 2008) Section Selection

The Specialized construction activities industry is in tandem with description of Division 43 under Section F: This division includes specialized construction activities, i.e. the construction of parts of buildings and civil engineering works without responsibility for the entire project. It is usually specialized in one aspect common to different structures, requiring specialized skills or equipment, such as pile-driving, foundation work, carcass work, concrete work, bricklaying, stone setting, scaffolding, roof covering, etc., are covered. Erection of steel structures activity is included. Most specialized construction activities are carried out by subcontractor especially in repair construction done directly for the owner of the property. Building finishing and building completion activities are also part of the industry.

Installation of all kind of utilities that make the construction function of which activities are usually performed at the site of the construction, where parts of the job may be carried out in a special shop are incorporated. Other activities such as plumbing, installation of heating and air-conditioning systems, antennas, alarm systems and other electrical work, sprinkler systems, elevators and escalators, etc. are included besides insulation work (water, heat, sound), sheet metal work, commercial refrigerating work, the installation of illumination and signalling systems for roads, railways, airports, harbours, etc. Repair works on the earlier mentioned activities are also part of the activities of the industry.

Building completion activities encompass activities that contribute to the completion or finishing of a construction such as glazing, plastering, painting, floor and wall tiling or covering with other materials like parquet, carpets, wallpaper, etc., floor sanding, finish carpentry, acoustical work, cleaning of the exterior, etc. are also included. Lastly, renting of construction equipment with the operator is classified with the associated construction activity².

² Department of Statistics Malaysia. (2008). Malaysia Standard Industrial Classification (MSIC) 2008.

1.6 Structure of Chapter

This chapter concludes a brief description of the entire study which includes:

a) Chapter 1

This chapter includes a brief explanation of the objective, scope and justification of the study.

b) Chapter 2

This chapter includes the review of the industry's stakeholders, government policies, market intelligence and relation with Industrial Revolution 4.0 (IR4.0).

c) Chapter 3

This chapter includes the explanation of the methodology implement in this study in order to obtain the results.

d) Chapter 4

This chapter includes the findings of Occupational Structure (OS), Occupational Description (OD), Competencies in Demand, Job in Demand and etc.

e) Chapter 5

This chapter includes the discussion and conclusion of the findings and/or other related information obtained from the industry; and suggest a recommendation based on the finding.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter provides a brief overview of the acts, relevant frameworks, standards, type of training, relevance to MSIC 2008, key stakeholders, related legislations, policy and initiatives, industry market intelligence, list of NOSS relevant to MSIC classified under Specialized Construction Activities (to date 160 NOSS available) in Malaysia, overview of developed countries (United Kingdom and Sweden) and relation of the activities with IR4.0. Findings in this chapter were obtained primarily through literature review and subsequently confirmed by the development panel members to obtain insight on the matters at hand from a practitioner's perspective.

2.1.1 National Skills Development Act 2006 (Act 652)

The National Skills Development Act 2006 (Act 652) came into effect on 1 September 2006 after it was officially gazette on 29 June 2006, with the mandate of promoting, through skills training, the development and improvement of a person's abilities, which are needed for vocation, and to provide for other matters connected therewith. The Act 652 is significant because for the first time in the history of skills training in Malaysia, a national legislation has been enacted solely and exclusively for skills training and development. In addition, the meaning and scope of skills training has been clarified and given a statutory interpretation that can be used to distinguish it from other components of the country's national education and training system. The Act 652 also provides for the implementation of a Malaysian Skills Certification System, leading to the award of five (5) levels of national skills qualification, namely Malaysian Skills Certificate Level 1, 2, and 3; Malaysian Skills Diploma; and Malaysian Skills Advanced Diploma³.

³ National Skills Development Act 652 (2019, September 2) retrieved from <http://www.agc.gov.my/agcportal/index.php>

2.1.2 Malaysia Qualification Framework (MQF)

Malaysia Qualification Framework (MQF) refers to the policy framework that satisfies both the national and international recognized qualifications. It consists of titles and guidelines, together with principles and protocols covering articulation and issuance of qualifications and statements of attainment. Elements of the qualification's framework indicate the achievement for each qualification title. It will also provide progression routes for all the graduates in the respective occupational fields. The MQF has eight levels of qualifications in three sectors and it is supported by lifelong education pathways as shown in Table 2.1. The Department of Skills Development (DSD) governs the skills sector, in which there are five (5) levels of skills qualification. The definition for each level of skills qualification is specified in the Malaysian Occupational Skills Qualification Framework (MOSQF) can be refer in Annex 1⁴.

Table 2.1: Malaysian Qualification Framework (MQF) Chart
(Source: Malaysian Qualification Framework 2nd Edition)

MQF Level	Minimum Graduating Credit	Academic Sector	Technical and Vocational Education and Training (TVET) Sector	Lifelong Learning/APEL Criteria for APEL(A)
8	No credit rating	PhD by Research		Admission criteria: 35 years old Bachelor's degree in relevant field/equivalent 5 years' work experience Passed APEL assessment
	80	Doctoral Degree by Mixed Mode & Coursework		
7	No credit rating	Master's by Research		Admission criteria: 30 years old

⁴ Malaysian Qualification Agency. 2018. Malaysian Qualification Framework 2nd Edition

MQF Level	Minimum Graduating Credit	Academic Sector	Technical and Vocational Education and Training (TVET) Sector	Lifelong Learning/APEL Criteria for APEL(A)
	40	Master's by Mixed Mode & Coursework		STPM/Diploma/equivalent Relevant work experience Passed APEL assessment
	30	Postgraduate Diploma		
	20	Postgraduate Certificate		
6	120	Bachelor's degree		Admission criteria: 21 years old Relevant work experience Passed APEL assessment
	66	Graduate Diploma		
	36	Graduate Certificate		
5	40	Advanced Diploma	5	
4	90	Diploma	4	Admission criteria: 20 years old Relevant work experience Passed APEL assessment
3	60	Certificate	3	Admission criteria: 19 years old Relevant work experience Passed APEL assessment
2	30	Certificate	2	3R
1	15	Certificate	1	3R

2.1.3 Occupational Framework (OF)

Occupational Framework (OF) was previously known as Occupational Analysis (OA). The OF is an outcome of an occupational analysis and research work carried on a particular industry sector. The contents of an OF shall include occupational structure, occupational definitions, job descriptions, manpower requirements and industry intelligence. The Occupational Structure (OS) is a matrix that will show the occupational areas and career paths for a particular occupation. The information on manpower skills requirements, Occupational Descriptions (OD) and industry intelligence will allow an overall understanding of the industry's occupational areas. Manpower skills requirements are to identify the skills gaps, and shortages in workforce. Industry Intelligence is based on an actual qualitative and quantitative data from the industry to further strengthen and prove the reliability of the data. Therefore, a properly planned development and analysis will enable the OF to be precise and accurate; thus, ensuring that it will be a reliable source of information for further analysis of the industry and the development of NOSS and training requirements⁵.

2.1.4 National Occupational Skills Standard (NOSS) and National Competency Standard (NCS)

National Occupational Skills Standard (NOSS) is defined as a specification of the competencies expected of a skilled worker who is gainfully employed in Malaysia for an occupational area, level and pathway to achieve the competencies and was gazetted in Part IV of National Skills Development Act 652. Meanwhile, National Competency Standard (NCS) is describe the knowledge, skills and attitudes needed to perform in a particular occupation but also do not directly relate to any particular job classification. Standards are developed by the industry experts based on the needs of the industry and is utilized as the main tool in the implementation of Malaysian Skills Certification System in which the performance of existing industry workers and trainees are assessed based on Standards for awarding of Malaysian Skills Certificate⁶.

⁵ Department of Skills Development (2019, August 27) retrieved from <https://www.dsd.gov.my/jpkv4/index.php/my/perkhidmatan/noss>

⁶ Department of Skills Development (2019, August 27) retrieved from <https://www.dsd.gov.my/jpkv4/index.php/my/>

2.1.5 Competency Based Training (CBT)

Competency Based Training (CBT) is an approach to vocational training which emphasises on what a person can do in a work place as a result of education and training obtained. CBT is based on performance standards which are set by the sector with the focus on measuring the competences acquired (application of knowledge, skills and attitude) rather than the duration taken to complete the course. CBT is a learner-centric; applying outcome-based approach to training which allows individuals to develop skills at their own pace for a similar outcome. Thus, training practices can be customised for each individual to achieve a similar outcome. The CBT concept which forms the basis of Malaysian Skills Certification system is coordinated by DSD⁷.

2.2 Scope of Occupational Framework Based on MSIC 2008

The Malaysia Standard Industrial Classification 2008 (MSIC 2008) is provide a standard framework for classifying establishments and other statistical unit in the given industry in all official statistics. It also serves as a standard reference to users of official statistics on the type of economic activities included under the various categories of industries. This section provide the definition of the MSIC 2008 based on Department of Statistics Malaysia (DOSM) and also the criteria for the title selection for this study.

2.2.1 Malaysia Standard Industrial Classification 2008 (MSIC 2008) Definition

The MSIC 2008 is intended to be a standard classification of productive economic activities. Its main purpose is to provide a set of activity categories that can be utilised for the collection and presentation of statistics according to such activities. Therefore, MSIC aims to present this set of activity categories in such a way that entities can be classified according to the economic activity that they carry out. For purposes of international comparability, the MSIC 2008 Version 1.0 conforms closely to the International Standard Industrial Classification of All Economic Activities (ISIC) Revision 4, published by the

⁷ Department of Skill Development (2019, August 28) retrieved from <https://www.dsd.gov.my/jpkv4/index.php/my/>

United Nations Statistics Division, with some modifications to suit the national requirements.

The objective of an industrial classification system is to classify data in respect of the economy according to categories of activities and the characteristics of which will be similar. The MSIC 2008 is a classification of all types of economic activities and is not a classification of goods & services nor is it a classification of occupations⁸.

2.2.2 Title Selection Criteria

In order to review that the scope of the specialized construction activities is comprehensively covered in this Occupational Framework research, the definition of Specialized Construction Activities has to be spelt out clearly. Under MSIC, the area being researched falls under the Section and Division listed in Table 2.2.

Table 2.2: Summary of MSIC 2008 by Section, Division and Group
(Source: MSIC 2008)

Section	F	Construction
Division	43	Specialized construction activities
Group	431	Demolition and site preparation
	432	Electrical, plumbing and other construction installation activities
	433	Building completion and finishing
	439	Other specialized construction activities

⁸ Department of Statistics Malaysia. (2008). Malaysia Standard Industrial Classification (MSIC).

Table 2.3 below provides the structure for this particular Occupational Framework based on MSIC 2008 for the different group and item.

Table 2.3: Description of MSIC 2008 by Section, Division, Group, Item and Class

(Source: MSIC 2008)

CLASSIFICATION	CODE	DESCRIPTION
Section	F	Construction
Division	43	<p>Specialized construction activities</p> <p>This division includes specialized construction activities (special trades), i.e. the construction of parts of buildings and civil engineering works without responsibility for the entire project. It is usually specialized in one aspect common to different structures, requiring specialized skills or equipment, such as pile-driving, foundation work, carcass work, concrete work, bricklaying, stone setting, scaffolding, roof covering, etc., are covered. The erection of steel structures is included provided that the parts are not produced by the same unit.</p> <p>Specialized construction activities are mostly carried out under subcontract, but especially in repair construction it is done directly for the owner of the property.</p> <p>Also included are building finishing and building completion activities.</p> <p>Included is the installation of all kind of utilities that make the construction function as such. These activities are usually performed at the site of the construction, although parts of the job may be carried</p>

CLASSIFICATION	CODE	DESCRIPTION
		<p>out in a special shop. Included are activities such as plumbing, installation of heating and airconditioning systems, antennas, alarm systems and other electrical work, sprinkler systems, elevators and escalators, etc. Also included are insulation work (water, heat, sound), sheet metal work, commercial refrigerating work, the installation of illumination and signaling systems for roads, railways, airports, harbours, etc. Also included is the repair of the same type as the abovementioned activities.</p> <p>Building completion activities encompass activities that contribute to the completion or finishing of a construction such as glazing, plastering, painting, floor and wall tiling or covering with other materials like parquet, carpets, wallpaper, etc., floor sanding, finish carpentry, acoustical work, cleaning of the exterior, etc. Also included is the repair of the same type as the abovementioned activities.</p> <p>The renting of construction equipment with operator is classified with the associated construction activity.</p>
Group	431	<p>Demolition and site preparation</p> <p>This group includes activities of preparing a site for subsequent construction activities, including the removal of previously existing structures.</p>
Class	4311	Demolition
Item	43110	Demolition or wrecking of buildings and other structures

CLASSIFICATION	CODE	DESCRIPTION
Class	4312	Sites preparation Excludes: (a) drilling of production oil or gas wells, see 0610, 0620 (b) test drilling and test hole boring for mining operations (other than oil and gas extraction), see 09900 (c) decontamination of soil, see 39000 (d) water well drilling, see 42209 (e) shaft sinking, see 4390 (f) oil and gas field exploration, geophysical, geological and seismic surveying, see 71103
Item	43121	Clearing of building sites
Item	43122	Earth moving Includes: (a) excavation, landfill, levelling and grading of construction sites, trench digging, rock removal, blasting, etc. (b) land preparation work
Item	43123	Drilling, boring and core sampling for construction, geophysical, geological or similar purposes
Item	43124	Site preparation for mining Includes: overburden removal and other development and preparation of mineral properties and sites (except oil and gas sites)

CLASSIFICATION	CODE	DESCRIPTION
Item	43125	Drainage of agricultural or forestry land
Item	43126	Land reclamation work
Item	43129	Other site preparation activities n.e.c.
Group	432	<p>Electrical, plumbing and other construction installation activities</p> <p>This group includes installation activities that support the functioning of a building as such, including installation of electrical systems, plumbing (water, gas and sewage systems), heat and air-conditioning systems, elevators, etc.</p>
Class	4321	<p>Electrical installation</p> <p>Includes: connecting of electric appliances and household equipment, including baseboard heating</p> <p>Excludes: (a) construction of communications and power transmission lines, see 42201 and 42202 (b) monitoring or remote monitoring of electronic security alarm system, such as burglar and fire alarms including their maintenance, see 80200</p>
Item	43211	Electrical wiring and fittings
Item	43212	Telecommunications wiring
Item	43213	<p>Computer network and cable television wiring</p> <p>Includes: fibre optic</p>

CLASSIFICATION	CODE	DESCRIPTION
Item	43214	Satellite dishes
Item	43215	Lighting systems Includes: street lighting, airport runway lighting and electrical signals
Item	43216	Security systems Includes: fire alarm, burglar alarm system, CCTV, smoke detector, etc.
Item	43219	Electrical installation n.e.c.
Class	4322	Plumbing, heat and air-conditioning installation Includes: additions, alterations, maintenance and repair Excludes: installation of electric baseboard heating, see 4321
Item	43221	Installation of heating systems (electric, gas and oil)
Item	43222	Installation of furnaces, cooling towers
Item	43223	Installation of non-electric solar energy collectors
Item	43224	Installation of plumbing and sanitary equipment
Item	43225	Installation of ventilation, refrigeration or airconditioning equipment and ducts
Item	43226	Installation of gas fittings
Item	43227	Installation of fire and lawn sprinkler systems

CLASSIFICATION	CODE	DESCRIPTION
Item	43228	Steam piping
Item	43229	Plumbing, heat and air-conditioning installation n.e.c.
Class	4329	<p>Other construction installation</p> <p>Includes: installation of equipment other than electrical, plumbing, heating and airconditioning systems or industrial machinery in buildings and civil engineering structures, including maintenance and repair</p> <p>Excludes: installation of industrial machinery, see 33200</p>
Item	43291	<p>Installation of elevators, escalators in buildings or other construction projects</p> <p>Includes: repair and maintenance of lifts, elevators and escalators</p>
Item	43292	Installation of automated and revolving doors in buildings or other construction projects
Item	43293	Installation of lighting conductors in buildings or other construction projects
Item	43294	Installation vacuum cleaning systems in buildings or other construction projects
Item	43295	Installation thermal, sound or vibration insulation in buildings or other construction projects
Item	43299	Other construction installation n.e.c.
Group	433	Building completion and finishing

CLASSIFICATION	CODE	DESCRIPTION
		<p>This group includes application in buildings or other construction projects of interior and exterior plaster or stucco, including related lathing materials; installation of doors (except automated and revolving), windows, door and window frames, of wood or other materials; installation of fitted kitchens, staircases, shop fittings and the like; installation of furniture; interior completion such as ceilings, wooden wall coverings, movable partitions, etc.; laying, tiling, hanging or fitting in buildings or other construction projects; interior and exterior painting of buildings; painting of civil engineering structures; installation of glass, mirrors, etc.; cleaning of new buildings after construction; other building completion work n.e.c. and also interior installation of shops, mobile homes, boats, etc.</p>
Class	4330	<p>Building completion and finishing</p> <p>Includes: application in buildings or other construction projects of interior and exterior plaster or stucco, including related lathing materials</p> <p>Excludes: (a) installation of automated and revolving doors, see 43292 (b) general interior cleaning of buildings and other structures, see 8121 (c) specialized interior and exterior cleaning of buildings, see 81291</p>

CLASSIFICATION	CODE	DESCRIPTION
		(d) activities of interior decoration designers, see 74101 (e) activities of self-standing furniture, see 95240
Item	43301	Installation of doors, windows, door and window frames of wood or other materials, fitted kitchens, staircases, shop fittings and furniture Includes: (a) installation of self-manufactured carpentry or joinery of wood (b) installation of self-manufactured carpentry or joinery of plastics (a) installation of self-manufactured carpentry or joinery of metal
Item	43302	Laying, tiling, hanging or fitting in buildings or other construction projects of various types of materials Includes: (a) ceramic, concrete or cut stone wall or floor tiles, ceramic stove fitting (b) parquet and other wooden floor coverings (c) carpet and linoleum floor coverings, including of rubber or plastic (d) terrazzo, marble, granite or slate floor or wall coverings (e) wallpaper
Item	43303	Interior and exterior painting of buildings
Item	43304	Painting of civil engineering structures
Item	43305	Installation of glass, mirrors

CLASSIFICATION	CODE	DESCRIPTION
Item	43306	Interior completion Includes: ceiling, wooden wall coverings, movable partitions, etc.
Item	43307	Cleaning of new buildings after construction
Item	43309	Other building completion and finishing work n.e.c.
Group	439	Other specialized construction activities This group includes construction activities specializing in one aspect common to different kind of structures, requiring specialized skill or equipment; subsurface work; construction of outdoor swimming pools; steam cleaning, sand blasting and similar activities for building exteriors and renting of cranes with operator.
Class	4390	Other specialized construction activities Includes: (a) construction activities specializing in one aspect common to different kind of structures, requiring specialized skill or equipment (b) damp proofing and water proofing works (c) de-humidification of buildings (d) shaft sinking (e) steel bending (f) subsurface work (g) roof covering for residential building (h) erection of chimneys and industrial ovens

CLASSIFICATION	CODE	DESCRIPTION
		(i) work with specialist access requirements necessitating climbing skills and the use of related equipment, e.g. working at height on tall structures Excludes: (a) renting of construction machinery and equipment without operator, see 77306 (b) renting of scaffolds and work platforms
Item	43901	Construction of foundations, including pile driving
Item	43902	Erection of non-self-manufactured steel elements
Item	43903	Scaffolds and work platform erecting and dismantling
Item	43904	Bricklaying and stone setting
Item	43905	Construction of outdoor swimming pools
Item	43906	Steam cleaning, sand blasting and similar activities for building exteriors
Item	43907	Renting of construction machinery and equipment with operator (e.g. cranes)
Item	43909	Other specialized construction activities, n.e.c.

2.3 Key Stakeholders

The stakeholder is a group, organization or society at large that has a stake in the industry. Stakeholders can affect or be affected by the organization's actions, objectives and policies. In Malaysia, the stakeholders for the specialized construction activities comprise government agencies, regulatory bodies, industry associations, professional bodies and training centre of specialized construction activities.

2.3.1 Government Agencies and Regulatory Bodies

There many government agencies and regulatory bodies for the specialized construction activities in Malaysia. However, there are 6 agencies selected due to their function as the main agencies in the industry. The list of the agencies can be referred in Table 2.4.

Table 2.4: List of Government Agencies and Regulatory Bodies for Specialized Construction Activities Industry

NO	ORGANISATIONS	OVERVIEW, ROLES, FUNCTIONS AND RESPONSIBILITIES
1.	Ministry of Work (MoW)	<ul style="list-style-type: none"> a) Provides Federal Road network that can generate economic and enhance the quality of life; b) Ensures the implementation of development projects is on-schedule, cost and specification as well as high quality; and c) Provides the construction industry environment and professional services that is conducive in order to contribute to economic growth and international competitiveness⁹.
2.	<i>Jabatan Kerja Raya</i> (JKR)	<ul style="list-style-type: none"> a) Serves as a strategic partner to customers in achieving government policy success; b) Leads in asset management, project management and engineering excellence for the country; and c) Provide state infrastructure¹⁰.

⁹Ministry of Work (MoW). (2019, August 28). Retrieve from <http://www.kkr.gov.my/en/organization/profile>

¹⁰Public Work Department of Malaysia. (2019, August 28). Retrieve from <https://www.jkr.gov.my/en/page/misi-visi-fungsi-objektif-1>

NO	ORGANISATIONS	OVERVIEW, ROLES, FUNCTIONS AND RESPONSIBILITIES
3.	Construction Industry Development Board (CIDB)	a) Promotes and stimulates the development, improvement and expansion of the construction industry; b) Promotes, stimulates and undertakes research into any matter relating to the construction industry; c) Provides consultancy and advisory services with respect to the construction industry; d) Promotes and encourages quality assurance in the construction industry; and e) Regulates the conformance of standards for construction workmanship and materials ¹¹ .
4.	Department of Occupational Safety and Health (DOSH)	a) Study and review the policies and legislations of occupational safety and health. b) Enforce the legislations such as Occupational Safety and Health Act 1994 and its regulations, Factories and Machinery Act 1967 and its regulations etc. c) Conduct research and technical analysis on issues related to occupational safety and health at the workplace. d) Carry out promotional and publicity programs to employers, workers and the general public to foster and increase the awareness of occupational safety and health. e) A secretariat for the National Council regarding occupational safety and health ¹² .

¹¹Construction Industry Development Berhad (CIDB). (2019, August 28). Retrieve from <http://www.cidb.gov.my/index.php/en/corporate-info/functions>

¹² Department of Occupational Safety and Health (DOSH). (2019, August 28). Retrieve from <http://www.dosh.gov.my/index.php/about-us/dosh-profile>

NO	ORGANISATIONS	OVERVIEW, ROLES, FUNCTIONS AND RESPONSIBILITIES
5.	Energy Commission	<ul style="list-style-type: none"> a) Regulate the energy sector, specifically the electricity and piped gas supply industries, in Peninsular Malaysia and Sabah. b) Promote economy in the generation, transmission, distribution, supply and use of electricity and in the reticulation and use of gas c) Promote competition d) Enable fair and efficient market conduct and prevent the misuse of monopoly or market power in the electricity and piped gas industries. e) Ensure security, reliability, efficiency and quality of supply and services in the electricity and piped gas supply industries. f) Protect the industry, consumers and public from dangers arising from the generation, transmission, distribution, supply and use of electricity and the distribution, supply and use of piped gas¹³.
6.	SIRIM Berhad	<ul style="list-style-type: none"> a) Enhance public and industrial welfare, health and safety. b) Promote and undertake scientific industrial research such as improve technical processes and method, discover new processes and methods, encourage the utilization of Malaysian products. c) Adopt or adapt technology developed in other countries for use in Malaysia.

¹³ Energy Commission. (2019, August 28). Retrieve from <https://www.st.gov.my/details/aboutus/1>

NO	ORGANISATIONS	OVERVIEW, ROLES, FUNCTIONS AND RESPONSIBILITIES
		d) Provide industrial extension and consultative services to assist industry in meeting standard. e) Improve production processes and technique ¹⁴ .

2.3.2 Industry Associations and Professional Bodies

There are numerous industry associations and professional bodies related to the specialized construction activities industry in Malaysia. However, there are 6 industry associations selected due to their acts as the main association in this industry. The list can be referred in Table 2.5.

Table 2.5: List of Related Industry Associations and Professional Bodies for Specialized Construction Activities Industry

NO	ORGANISATIONS	OVERVIEW OF ROLES, FUNCTIONS AND RESPONSIBILITIES
1.	Board of Engineers Malaysia (BEM)	a) Facilitates the registration of engineers, engineering technologists, inspectors of works, sole proprietorships, partnerships and bodies corporate providing professional engineering services; and b) Regulates the professional conduct and practice of registered person in order to safeguard the safety and interest of the public ¹⁵ .

¹⁴ SIRIM Berhad. (2019, August 28). Retrieve from <http://www.sirim.my/vision-mission.html>

¹⁵Board of Engineers Malaysia (BEM). (2019, August 28). Retrieve from <http://www.bem.org.my/web/guest/history>

NO	ORGANISATIONS	OVERVIEW OF ROLES, FUNCTIONS AND RESPONSIBILITIES
2.	<i>Lembaga Arkitek Malaysia</i> (LAM)	a) Manage the registration of architects, graduate architects, interior designer and building draughtsmen and architectural consultancy practices; b) Conducts examinations for admission to the profession; c) Accreditation of architectural programmes; d) Develops and promotes the profession; and e) Represents the architectural profession in any matter at local and international levels ¹⁶ .
3.	Board of Quantity Surveyors Malaysia (BQSM)	a) Keeps and maintains a Register of Quantity Surveyors; b) Approve or reject applications for registration or approval to practise under this Act or to approve any such application subject to such conditions or restrictions as it may deem fit to impose; and c) Orders the issuance of a written warning or reprimand, the imposition of a fine, suspension, cancellation, removal or reinstatement in accordance with Part III and IV Quantity Surveyors Act ¹⁷ .

¹⁶Board of Architects Malaysia (LAM). (2019, August 28). Retrieve from <https://www.lam.gov.my/index.php/board-of-architects-malaysia/board-of-architects-malaysia.html>

¹⁷Board of Quantity Surveyors Malaysia (BQSM). (2019, August 28). Retrieve from <https://www.bqsm.gov.my/index.php/en/about-us/functions>

NO	ORGANISATIONS	OVERVIEW OF ROLES, FUNCTIONS AND RESPONSIBILITIES
4.	Association of Consulting Engineers Malaysia (ACEM)	<p>a) Promotes the advancement of the profession of consulting engineering by associating together for consultation and cooperation those engineers whose work is of a purely consultative character,</p> <p>b) Provides facilities for governments, public bodies, associations representing industry and trade, and others to confer with consulting engineers as a body and to ascertain their collective views.</p> <p>c) Advise on engineering matters shall be fully qualified engineers in their respective fields and should act in all professional matters¹⁸.</p>
5.	Real Estate and Housing Developers' Association Malaysia (REHDA)	<p>a) Act in accordance with the rules and constitution of REHDA Malaysia;</p> <p>b) Uphold at all times the dignity and reputation of REHDA Malaysia;</p> <p>c) Strive for excellence in the daily conduct of one's business as well as maintain the dignity of the real estate and housing industry¹⁹.</p>
6.	Master Builders Association Malaysia (MBAM)	<p>a) Promotes and co-ordinates the development of the construction industry.</p> <p>b) Promotes measures aimed at securing improvements pertaining to techniques,</p>

¹⁸The Association of Consulting Engineers Malaysia (ACEM). (2019, August 28). Retrieve from http://www.acem.com.my/index.php?option=com_content&task=view&id=25&Itemid=36

¹⁹Real Estate and Housing Developers' Association Malaysia (REHDA). (2019, August 28). Retrieve from <http://rehda.com/about/#AboutREHDA>

NO	ORGANISATIONS	OVERVIEW OF ROLES, FUNCTIONS AND RESPONSIBILITIES
		procedures and methods in the construction industry ²⁰ .

2.3.3 Training Centre

There are many established training centre related to the specialized construction activities industry in Malaysia. However, there are only 4 training centres selected due to their function as main training provider in this industry as listed in Table 2.6.

Table 2.6: List of Training Centre for Specialized Construction Activities Industry

NO	ORGANISATIONS	OVERVIEW, ROLES, FUNCTIONS AND RESPONSIBILITIES
1.	<i>Akademi Binaan Malaysia</i> (ABM)	<ul style="list-style-type: none"> a) Produces more skilled and semi-skilled local construction personnel which are productive construction workforce, to be safety conscious, to care about quality and efficient. b) Provides opportunities for construction workers to improve their skills with a more organized course with highly trained faculty c) Supporting the construction industry, fostering competitiveness with growing advanced technology. d) Develops and pioneers routes to export local skilled workers overseas²¹.

²⁰Master Builders Association Malaysia (MBAM). (2019, August 28). Retrieve from <http://mbam.org.my/mbam-history/>

²¹The Malaysian Academy of Buildings (ABM). (2019, August 28). Retrieve from <https://www.akademibinaan.com.my/abmweb/index.php/mengenai-abm/tentang-abm>

NO	ORGANISATIONS	OVERVIEW, ROLES, FUNCTIONS AND RESPONSIBILITIES
2.	GIATMARA	a) Provide technical and vocational skills training to youths in rural areas and in towns to enable them in acquiring skills as preparation to become skilled work force and technical entrepreneurs in meeting the needs of the industry and needs of economic development as well as entrepreneurship within local areas and in the country ²² .
3.	TVETMARA	a) Develop and maintain TVET educational programmes that prepare students for occupations important to Malaysia's economic development. b) TVETMARA includes institutes such as Kolej Kemahiran Tinggi MARA, MARA-Japan Industrial Institute and Institusi Kemahiran MARA ²³ .
4.	<i>Institut Latihan Perindustrian (ILP)</i>	a) A training institute for the production of skilled labour to meet the demands of the industrial sector in Malaysia. b) ILP is managed by the Department of Human Resources and has been producing national talents from the training certificate level to the Advanced Diploma in various skill courses.

²² GIATMARA (2019, August 27). Retrieved from <http://giatmara.edu.my>

²³ TVET MARA (2019, August 27). Retrieved from <http://www.tvetmara.edu.my/en/index.php/information-on-kktm-mjii-ikm>

2.4 Government Legislations, Policies and Initiatives

It is imperative that, this research has to refer to legislation, by-laws and policies that are directly related to specialized construction activities industry.

2.4.1 Government Legislations

In Malaysia, there are many legislations related to the specialized construction activities industry. In this study, 5 legislation that were selected due to their relevance in this industry. The following Table 2.7 indicates the relevant legislations to the overall specialized construction activities industry.

Table 2.7: Relevant Legislations for Specialized Construction Activities Industry

NO	LEGISLATIONS	DESCRIPTION
1	CIDB Act 1994 [Act 520]	An Act that provide for its functions relating to the construction industry and for matters connected; enhancing construction quality through registration of construction personnel as well as skills and competency certification; ensuring the quality of building material and compliance with standards; and contractors and site managers' responsibility to ensure safety of buildings during or after the construction work ²⁴ .
2	Quantity Surveyors Act 1967 [Act 487]	An Act to regulates the practice of quantity surveying consultancy in Malaysia. Only registered quantity surveyors are allowed to provide surveying consultancy service in Malaysia. Registered quantity surveyors include registered

²⁴CIDB Act 1994 [Act 520]. (2019, August 28). Retrieve from <http://www.cidb.gov.my/index.php/en/legislation/act-520>

NO	LEGISLATIONS	DESCRIPTION
		quantity surveyor, registered graduate quantity surveyor, temporary registered quantity surveyor ²⁵ .
3	Architects Act 1967 [Act 117]	An Act that safeguard the public safety, health and welfare in relation to the design provided by architects. Control the registrations for architectural practice to uphold the advancement of professionalism in Architectural profession to ensure public are getting the services they ought to get from a professional architect ²⁶ .
4	Registration of Engineers Act 1967 [Act 138]	An Act that provide for the registration of engineers, and sole proprietorships, partnerships and bodies corporate providing professional engineering services and for purposes connected therewith ²⁷ .
5	Street Drainage Building Act 1974 [Act 133]	An Act that provides the minimum requirements for the control and construction of street, drainage and building in local authorities' areas. There are 9 parts to the building code which include preliminary, submission of plans for approval, space light and ventilation, temporary works, structural requirements, fire requirements, fire alarms, fire detection, fire extinguishment and firefighting access and miscellaneous ²⁸ .

²⁵ Surveying Consultancy Services. pages 6

²⁶ Architects Act 1967 [Act 117]. (2019, August 28). Retrieve from <http://www.lam.gov.my/index.php/act-rules/finish/14-act-and-rules/5497-architects-act-1967.html>

²⁷ Registration of Engineers Act 1967 [Act 138]. (2019, August 28). Retrieve from <http://apec-emf.org/wp-content/uploads/2013/12/ACT2007.pdf>

²⁸ UBBL 1984 (2019, August 28) retrieved from www.mpc.gov.my › wp-content › uploads › 2016/04 › Chapter-4

2.4.2 Government Policies and Initiatives

The government policies and initiatives is the plan of action adopted or pursued by the government in order to increase the growth of the sector. This policies and initiatives are based on the Eleventh Malaysia Plan, the Mid Term Review and the initiatives by the regulatory bodies or industry association.

a) Construction Industry Transformation Program (CITP)

The CITP is Malaysia's national agenda to transform the construction industry from 2016 to 2020. It aims to accelerating the development of the Malaysian construction industry and preparing it to meet the future demands of the economy will thus, require an industry transformation. The Ministry of Works, collaborating with its agencies and more specifically, the Construction Industry Development Board has spearheaded the development of this Construction Industry Transformation Programme. Given the strong interdependencies between construction and the other sectors in the economy, this transformation of the construction industry needed to be the joint effort of stakeholders across government ministries and agencies, industry players, professional boards and associations, universities and research organisations.

A wide range of stakeholders has therefore been involved in the development of the CITP, as their input and support for implementation are critical for the CITP to be successful. Four strategic thrusts have been identified to guide the transformation and continued development of the construction industry and to address the issues mentioned above. The four thrusts are quality, safety and professionalism; environmental sustainability; productivity; and internationalisation.

b) Industrialized Building System Initiative

CIDB has initiated to industrialise the industry as an effort to move away from labour intensive activities with Industrialized Building System (IBS). The initiative is part of producing and delivering high quality product, value for money and to stay competitive. IBS offers technology-intensive construction

technique where components are manufactured in a controlled environment, either at site or off-site, placed and assembled into construction works. CIDB established the one-stop reference IBS Centre that houses the IBS Info Gallery, IBS Component Gallery, IBS Show Village and IBS Testing Facilities.

c) Work Distribution Policy to Class G1 and G2

Ministry of Public Works has introduced a 10% Distribution Policy to Class G2 contractors for projects worth RM10 million and above beginning in 2008. However, this policy was suspended on 7 May, 2009, and further improved and extended to Class G1 contractor in 2010. Known as the Work Distribution Policy to Class G1 and G2 and implemented through the allocation of money while in the tender documents for projects worth RM10 million and above. This policy aims to provide more job opportunities to the contractor class G1 (Bumiputera) and G2 (State) in accordance with the large number of those contractors. In addition, the implementation of this policy also provided exposure to G1 & G2 class contractors in order to be involved in the implementation of large projects while increasing their skill level in the construction industry²⁹.

2.5 Industry and Market Intelligence

Industry and market intelligence are the collection and analysis of data of an industry by various sources of data to be utilised by the industry to make business decisions, manpower developments and training requirements. Industry intelligence is critical for developing strategies in the development of the industry, areas of manpower development and the impact of those developments. This section provide information regarding specialized construction industry based on the industry growth and employment statistics.

²⁹Work Distribution Policy to Class G1 and G2. (2019, August 28). Retrieve from <http://www.kkr.gov.my/en/node/18320>

2.5.1 Growth of Specialized Construction Activities Industry

Based on National Account Gross Domestic Product 2015-2018, Malaysia's economy grew by 4.7 per cent in 2018 compared to the previous year, 2017 at 5.7 per cent³⁰. Malaysia gross domestic product (GDP) in 2018 recorded RM 1,361.5 billion where the main contributor comes from services and manufacturing sector with 56.7 per cent and 22.4 per cent respectively. Meanwhile, the main influencer for expenditure was driven by Private Final Consumption Expenditure.

Other than that, for this research, it focused on specialized construction industry in construction sector. For construction sector growth on Malaysia GDP, construction sector recorded 4.8 per cent contribution to Malaysia GDP 2018 compared to 4.9 per cent in 2017, 4.9 per cent in 2016 and 4.7 per cent in 2015³¹. From the growth, it can be seen that, in 2018, construction sector recorded decrease percentage share to Malaysia GDP compare to 2017. More than that, for specialized construction percentage share to Malaysia GDP for 2015–2018, it contributed 0.8 per cent³².

The annual percentage share of specialized construction industry in 2016 to 2018, it can be seen that there are slightly decreasing in term of per cent by year. In 2016, annual percentage share for specialized construction industry is 8.9 per cent and decreasing throughout the year 2017 with 9.5 per cent and in 2018 with 9.2 per cent³³.

2.5.2 Employment Statistics

This section provides an overview regarding labour force, labour demand in Malaysia and employment statistics of specialized construction industry.

³⁰ Department of Statistics Malaysia. 2019. National Account Gross Domestic Product 2018. Page 1

³¹ Department of Statistics Malaysia. 2019. National Account Gross Domestic Product 2018. Page 42

³² Department of Statistics Malaysia. 2019. National Account Gross Domestic Product 2018. Page 43

³³ Department of Statistics Malaysia. 2019. National Account Gross Domestic Product 2018. Page 35

a) Labour Force in Malaysia

Labour force can be define as the sum of persons in employment plus persons in unemployment. Together these two groups of the establishment represent the current supply of labour for the production of goods and services taking place in a country through market transactions in exchange for remuneration³⁴. The concept and definition of labour force in Malaysia are stated in Figure 2.1.

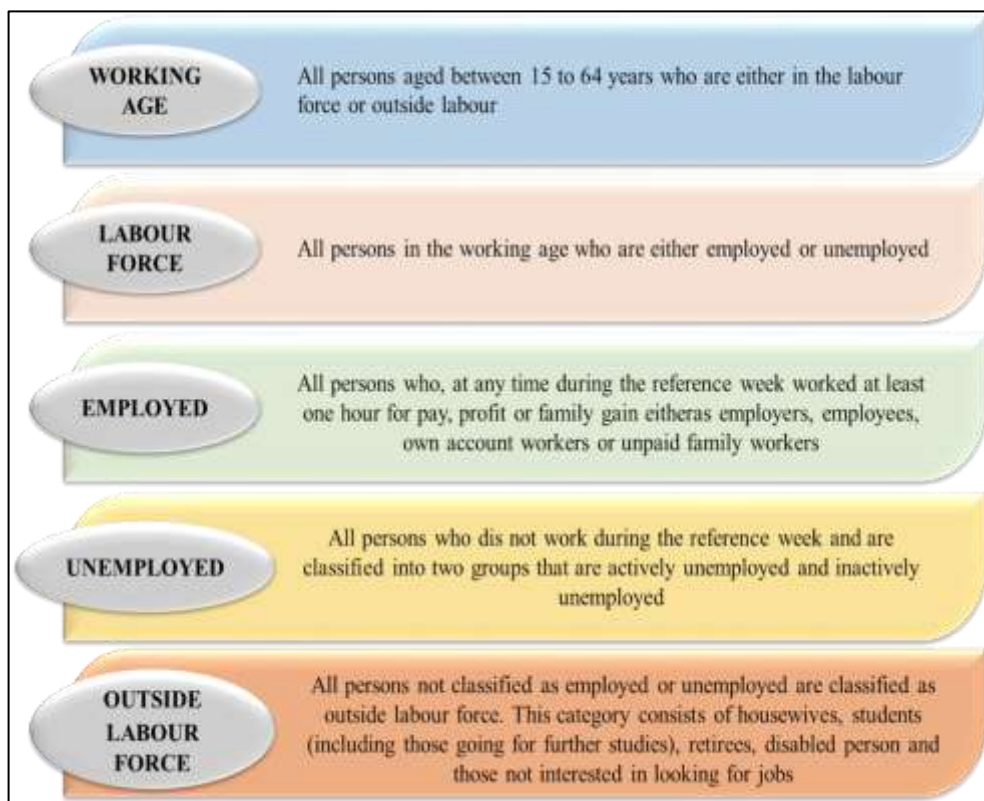


Figure 2.1: The Concept and Definition of Labour Force in Malaysia
(Sources: Department of Statistics Malaysia, 2019)

In 2018, the labour force in Malaysia shows an increase of 2.0 per cent which is nearly 15.3 million persons as compared to 15.0 million persons in 2017. The increase in labour force was contributed by 299,200 employed persons.

³⁴ International Labour Organization. 2018. Labour force (2019, 30 September) Retrieved from https://www.ilo.org/global/statistics-and-databases/statistics-overview-and-topics/WCMS_470304/lang-en/index.htm

Labour force participation rate (LFPR) in 2018 increased 0.3 percentage points to 68.3 per cent as compared to 68.0 per cent in 2017³⁵. Hence, the remaining 31.7 per cent of the working age establishment was outside the labour force. The unemployment rate in 2018, on the other hand improved to 3.3 per cent as compared to 3.4 percent in 2017. This shows that the country's economy is still operating at full employment that is unemployment rate below 4.0 per cent.

b) Overview of Construction Sector Labour Demand

Labour demand indicates the total labour that the economy is willing to employ at any given point of time. At the microeconomic level, labour demand by firm refers to positions in the company; and through the process of hires and separations, the informations of filled positions and vacancies can be estimated. The concepts and definitions of the statistics on labour demand in this publication are as Figure 2.2.

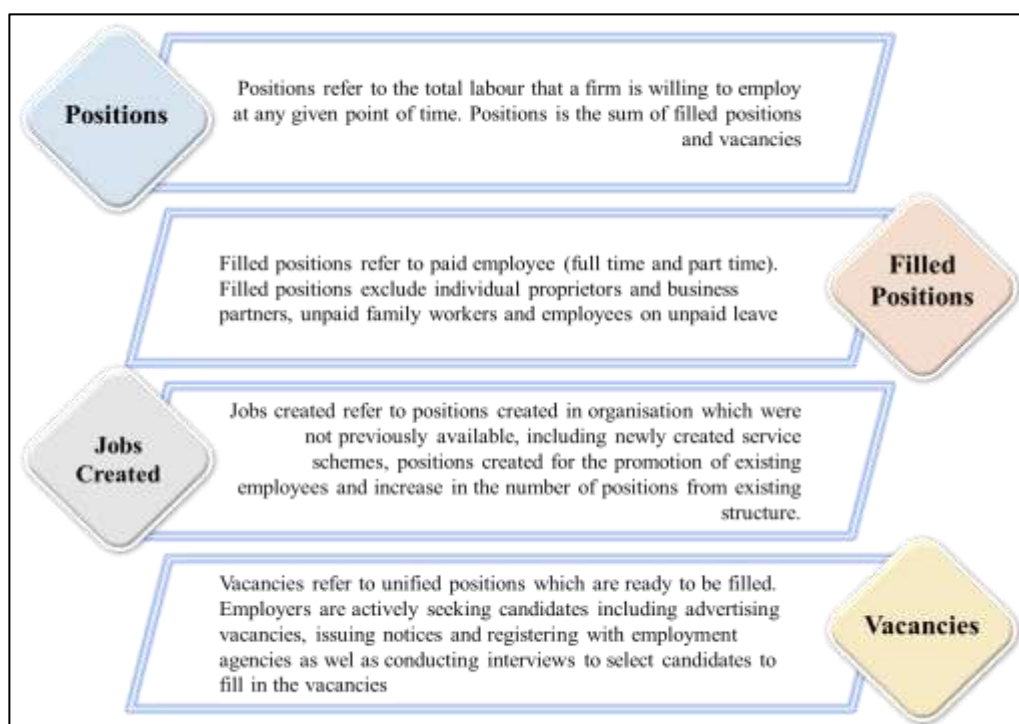


Figure 2.2: The Concepts and Definitions of The Statistics on Labour Demand
(Sources: Department of Statistics Malaysia, 2019)

³⁵ Department of Statistics Malaysia. 2019. The Labour Force Survey Report 2018. Page 12

In 2018, construction sector posted 1,313 thousand positions, dropped 13 thousand as against 1,326 thousand in 2017. The number of filled positions decreased to 1,291 thousand (2017: 1,304 thousand) while vacancies in this sector was 21 thousand (2017: 22 thousand). Meanwhile, there were 20 thousand jobs created in the Construction sector in 2018³⁶. The detailed information can be referred in Figure 2.3.

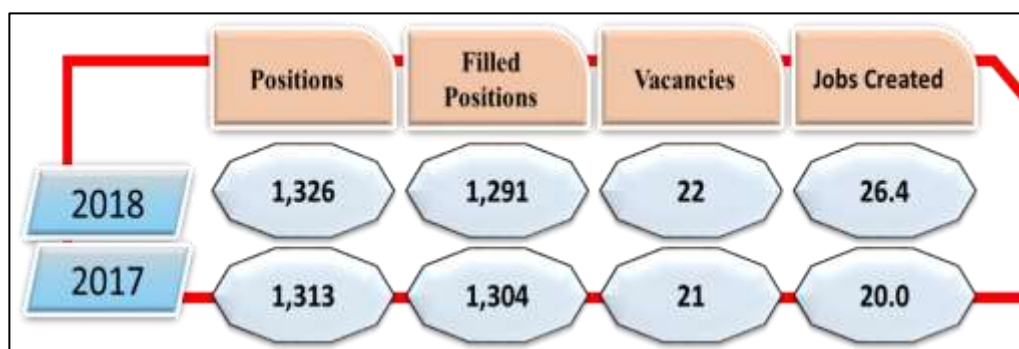


Figure 2.3: Employment Statistics of the Construction Sector
(Sources: Department of Statistics Malaysia, 2019)

For positions by skill in construction sector by percentage share for 2018, 84.3 per cent was recorded for semi-skilled worker, 11.8 per cent for skilled worker and 3.9 per cent for low skilled worker³⁷. As compared to 2017, the numbers of low skilled worker, semi-skilled worker and skilled worker for position and skill in construction sector by percentage share are remain the same. The details of the information can be referred to Figure 2.4.

³⁶ Department of Statistics Malaysia. 2019. Employment Statistics Second Quarter 2019. Page 12

³⁷ Department of Statistics Malaysia. 2019. Employment Statistics Second Quarter 2019. Page 32

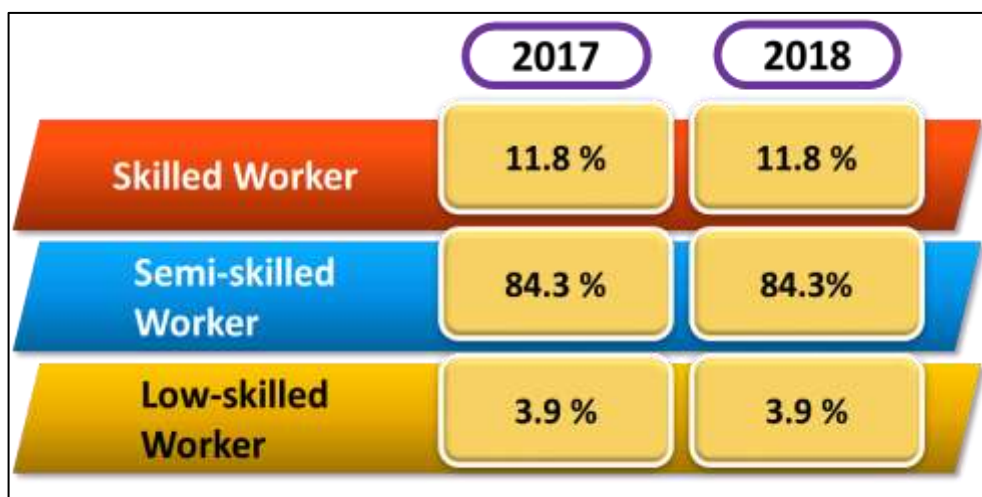


Figure 2.4: Category of Skills in Construction Sector by Percentage Share
(Source: Department of Statistics Malaysia, 2019)

Other than that, for filled position by skill in construction sector by percentage share, for 2018, 84.8 per cent was recorded for semi-skilled worker, 11.6 per cent for skilled worker and 3.6 per cent for low skilled worker³⁸. The comparison with 2017 can be referred to Figure 2.5.

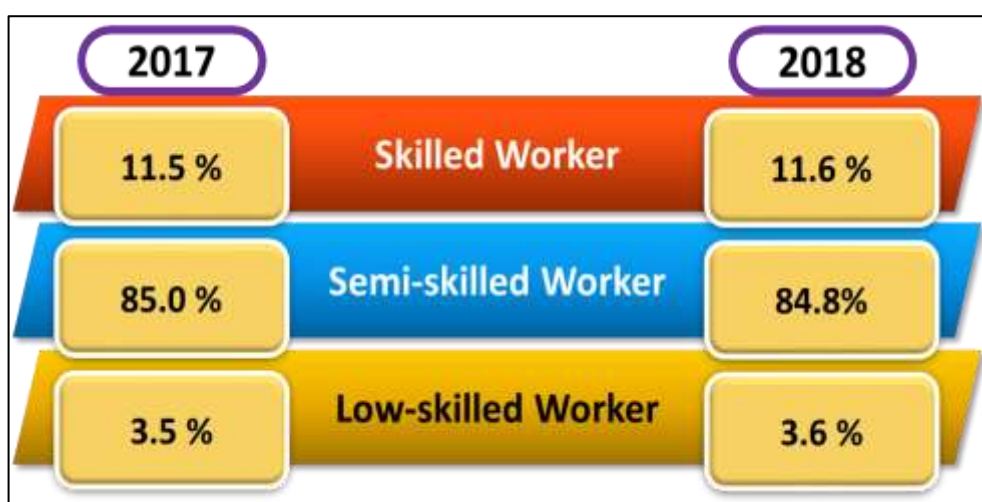


Figure 2.5: Filled Position by Skill in Construction Sector by Percentage Share
(Source: Department of Statistics Malaysia, 2019)

³⁸ Department of Statistics Malaysia. 2019. Employment Statistics Second Quarter 2019. Page 39

More than that, for vacancies by skill in construction sector by percentage share for 2018, 50.8 per cent was recorded for semi-skilled worker, 25.5 per cent for skilled worker and 23.7 per cent for low skilled worker³⁹. The comparison with 2017 can be referred to Figure 2.6.

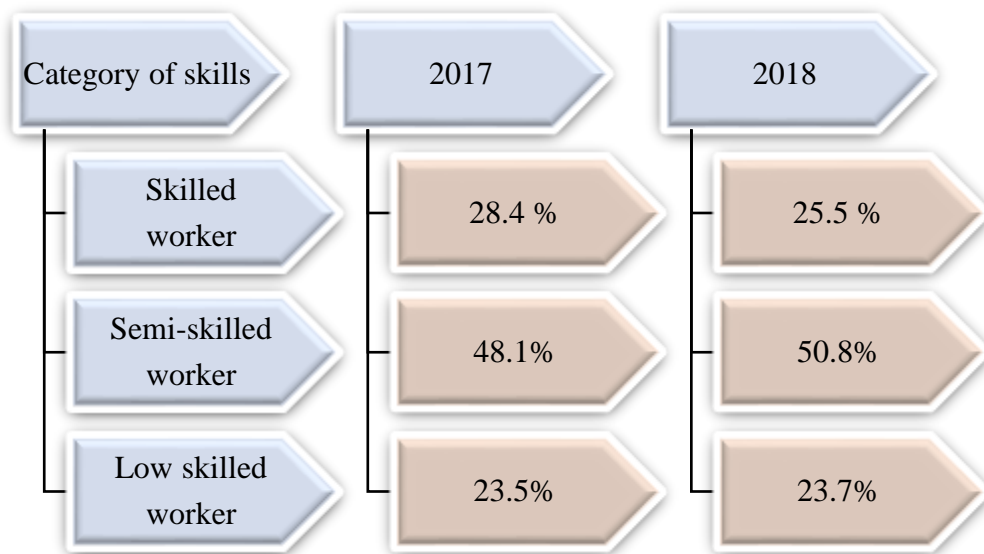


Figure 2.6: Vacancies and Skill in Construction Sector by Percentage Share
(Source: Department of Statistics Malaysia, 2019)

Next, for jobs created by skill in construction sector by percentage share for 2018, 58.1 per cent was recorded for semi-skilled worker, 37.5 per cent for skilled worker and 4.4 per cent for low skilled worker⁴⁰. The comparison with 2017 can be referred Figure 2.7.

³⁹ Department of Statistics Malaysia. 2019. Employment Statistics Second Quarter 2019. Page 44

⁴⁰ Department of Statistics Malaysia. 2019. Employment Statistics Second Quarter 2019. Page 51

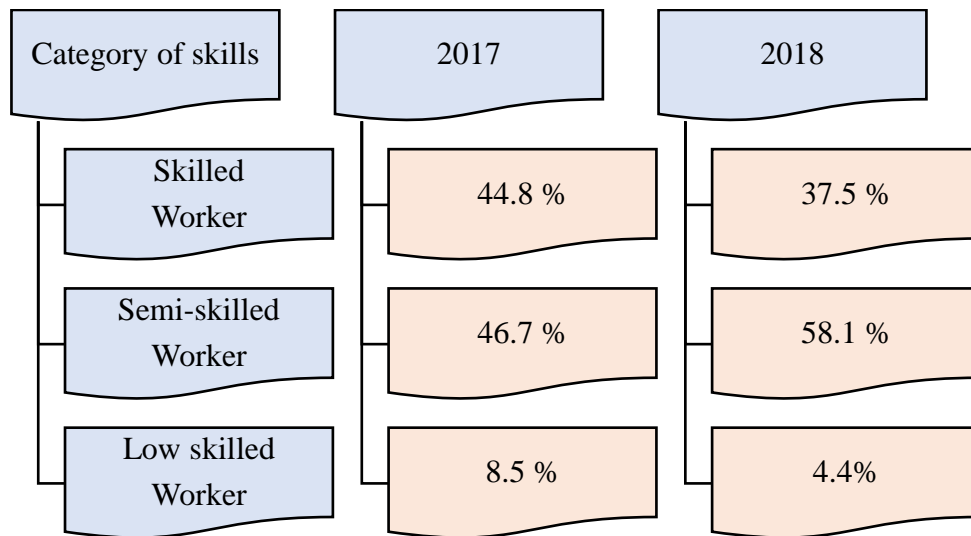


Figure 2.7: Jobs Created and Skill in Construction Sector by Percentage Share
(Source: Department of Statistics Malaysia, 2019)

c) Employment Growth of Specialised Trade Activities Industry

The number of persons engaged in special trade activities for construction industry for 2015 and 2017 are as shown in Figure 2.8. Number of persons engaged in special trade activities sub-sector in construction industry increase to 310,812 persons in 2017 compare to only 310,172 persons in 2015.

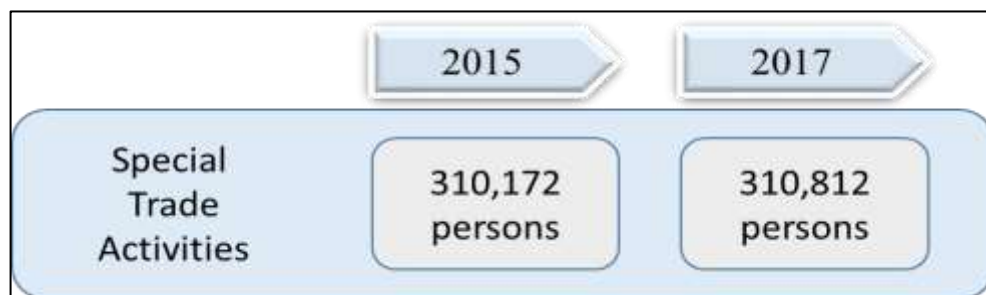


Figure 2.8: Number of Persons Engaged for Special Trade Activities Sub-sector in Construction Industry, 2015 and 2017, Malaysia
(Source: Department of Statistics Malaysia, 2019)

2.5.3 Conclusion

In conclusion, from year 2015-2018, the specialized construction industry has become one of the contributor toward Malaysia GDP. The increasing by year with 0.9 per cent in 2018 compare to 0.8 in 2015 to 2017.

As for the employment statistics, the specialized construction contribute to 310,812 number of persons engaged in 2018 increased from 310,172 as compared to 2017. The growth of this industry clearly shows that specialized construction industry is one of potential industry for enhance country development in the future.

2.6 Existing NOSS Relevant to MSIC 2008 Section F, Division 43

Currently there are 160 National Occupational Skills Standards (NOSS) developed by Department of Skills Development (DSD) that are relevant to the sub-sectors and areas in the Specialized Construction Activities Industry. The details of the existing NOSS relevant are in the Table 2.8.

Table 2.8: Summary of NOSS Developed under the Group F43
(Source: NOSS Registry January 2019)

MSIC Group	Corresponding NOSS/ Level	
431 - Demolition and Site Preparation	1. F431-001-1:2019	Site Investigation Drilling Operation L1
	2. F431-001-2:2019	Site Investigation Drilling Operation L2
	3. F431-001-3:2019	Site Investigation Drilling Supervision L3
	4. BC-044-3:2014	Demolition Works Operation L3
432 - Electrical, Plumbing And Other Construction Installation Activities	1. F432-001-2:2017	Insulation Operations L2
	2. F432-001-3:2017	Insulation Operations Supervision L3
	3. F432-002-2:2017	Plumbing And Sanitary Installation Operation L2
	4. F432-002-3:2017	Plumbing And Sanitary Installation Supervision L3
	5. F432-003-2:2017	Air-Conditioning and Mechanical Ventilation (ACMV) Installation & Maintenance

MSIC Group	Corresponding NOSS/ Level
	Operation L2
6. F432-003-3:2017	Air-Conditioning and Mechanical Ventilation (ACMV) Installation & Maintenance
	Operation Supervision L3
7. BC-045-2:2013	Signage Production & Installation L2
8. BC-045-3:2013	Signage Supervision L3
9. BC-047-2:2013	Lighting System Maintenance L2
10. BC-047-3:2013	Lighting System Supervision L3
11. BC-064-2:2015	Lift & Escalator Installation, Testing & Maintenance L2
12. BC-064-3:2015	Lift & Escalator Installation Supervision L3
13. BC-065-3:2015	Lift & Escalator Testing & Maintenance Supervision L3
14. F432-004-2:2018	Water Reticulation Installation L2
15. F432-004-3:2018	Water Reticulation Installation Supervision L3
16. DS-015-2:2014	Maritime Surveillance System Installation & Maintenance L2
17. DS-015-3:2014	Maritime Surveillance System Installation & Maintenance Supervision L3
18. DS-015-4:2014	Maritime Surveillance System Installation & Maintenance Coordination L4
19. DS-015-5:2014	Maritime Surveillance System Installation & Maintenance Management L5
20. DS-050-3:2013	Electronic Security System Installation & Maintenance L3
21. ID-020-1	Doors and Windows Maker L1 (2009)
22. ID-020-2	Doors and Windows Senior Maker L2 (2009)
23. ID-020-3	Doors and Windows Making Supervisor L3 (2009)
24. ID-021-1	Decorative Ceilings Installer L1 (2009)
25. ID-021-2	Decorative Ceilings Senior Installer L2 (2009)

MSIC Group	Corresponding NOSS/ Level	
	26. ID-021-3	Decorative Ceilings Installation Supervisor L3 (2009)
	27. FPA3	Fire Protection Active Supervisor L3 (2003)
	28. FPE1	Fire Protection Installer (Electrical) L1 (2003)
	29. FPE2	Fire Protection Installer (Electrical) L2 (2003)
	30. FPM1	Fire Protection Installer (Mechanical) L1 (2003)
	31. FPM2	Fire Protection Installer (Mechanical) L2 (2003)
	32. FPP1	Fire Protection Passive Applicator L1 (2003)
	33. FPP2	Fire Protection Passive Applicator L2 (2003)
	34. FPP3	Fire Protection Passive Supervisor L3 (2003)
	35. FPS1	Fire Protection Maintenance Assistant L1 (2003)
	36. FPS2	Fire Protection Maintenance Assistant L2 (2003)
	37. FPS3	Fire Protection Maintenance Supervisor L3 (2003)
	38. ME-020-2:2012	HVAC Single Phase Air-Conditioning Equipment (Installation, Servicing, Troubleshooting & Repair) L2
	39. ME-020-3:2012	HVAC Installation and Maintenance Supervision L3
	40. ME-020-4:2012	HVAC Design, Installation and Maintenance Management L4
	41. ME-020-5:2012	HVAC Design, Installation and Maintenance Management L5
	42. ME-021-2:2012	HVAC Three Phase Air-Conditioning Equipment (Servicing, Troubleshooting & Repair) L2
	43. A-020-1	Wood Based Building Constructor L1 (1995)

MSIC Group	Corresponding NOSS/ Level
	44. A-020-2 Wood Based Building Constructor L2 (1995)
	45. A-020-3 Wood Based Building Construction Technician L3 (1995)
	46. A-021-3 Wood Machinist L3 (1995)
	47. RB-051-1 Interior Wood Work Carpenter L1 (2009)
	48. RB-051-2 Interior Wood Work Senior Carpenter L2 (2009)
	49. RB-051-3 Interior Wood Work Senior Carpenter Supervisor L3 (2009)
	50. BC-035-3:2016 Timber Carpentry and Joinery L3
	51. EE-042-4:2014 Network Technology L4
	52. EE-210-2 Solar Installation and Maintenance Assistant Practitioner L2 (2010)
	53. EE-210-3 Solar Installation and Maintenance Practitioner L3 (2010)
	54. EE-210-4 Solar Technology Assistant Designer L4 (2010) Solar Technology Designer L5 (2010)
	55. EE-210-5 LT Overhead Installation L1
	56. EE-211-1:2012 LT Overhead Installation & Operation L2
	57. EE-211-2:2012 LT Overhead Installation, Operation &
	58. EE-211-3:2012 Maintenance L3 Cable Jointer 1 L3
	59. EE-300-3:2014 Cable Jointer 2 L3
	60. EE-301-3:2014 Electrical Chargeman A0 (Low Voltage) L3
	61. EE-302-3:2014 Electrical Chargeman A1 (Low Voltage) L3
	62. EE-303-3:2014 Electrical Chargeman A4 (Low Voltage) L3
	63. EE-304-3:2014 Single Phase Electrical Installation &
	64. EE-320-2:2012 Maintenance L2
	65. EE-320-3:2012 Three Phase Electrical Installation & Maintenance L3
	66. EE-320-4:2012 Low Voltage Electrical Installation &

MSIC Group	Corresponding NOSS/ Level	
	67. EE-320-5:2012 68. EE-322-3:2013 69. EE-323-3:2013 70. EE-320-2:2012 71. EE-324-3:2013 72. EE-324-4:2013 73. EE-324-5:2013	Maintenance L4 High Voltage Electrical Installation & Maintenance L5 Electrical Lighting & LED Installation & Maintenance L3 CCTV System Installation & Maintenance L3 Single Phase Electrical Installation & Maintenance L2 Fibre Optic Installation & Maintenance-Telecommunication L3 Fibre Optic Installation & Maintenance Management – Telecommunication L4 Fibre Optic Installation & Maintenance Management – Telecommunication L5
433 - Building Completion And Finishing	1. BC-040-1:2013 2. BC-040-2:2013 3. BC-040-3:2013 4. BC-043-3:2014 5. BC-046-2:2013 6. BC-046-3:2013 7. DWC1 8. DWC2 9. DWC 3 10. DWC 4 11. DWC 5 12. DWP 1 13. DWP 2 14. DWP 3 15. DCS 3	Stainless Steel Installation L1 Stainless Steel Fabrication L2 Stainless Steel Installation & Fabrication Supervision L3 Pre Stressing L3 Waterproofing Application L2 Waterproofing Supervision L3 Drywall Clean Room Assistant Installer L1 (2002) Drywall Clean Room Installer L2 (2002) Drywall Clean Room Supervisor L3 (2002) Drywall & Ceiling Project Executive L4 (2002) Drywall & Ceiling Project Manager L5 (2002) Drywall Partition Assistant Installer L1 (2002) Drywall Partition Installer L2 (2002) Drywall Partition Supervisor L3 (2002) Ceiling Supervisor L3 (2002)

MSIC Group	Corresponding NOSS/ Level	
	16. DCG 1	Demountable Ceiling Assistant Installer L1 (2002)
	17. DCG 2	Demountable Ceiling Installer L2 (2002)
	18. DCF 1	Fixed Ceiling Assistant Installer L1 (2002)
	19. DCF 2	Fixed Ceiling Installer L2 (2002)
	20. GLZ3	Glazier Supervisor L3 (2001)
	21. FWA 3	Aluminium Frame Works Supervisor L3 (2001)
	22. F433-001-2:2017	Building Glass and Aluminium Installation L2
	23. F433-002-3:2017	IBS Metal Door & Window Frame Installation Supervision L3
	24. F433-002-2:2017	IBS Metal Door & Window Frame Installation L2
	25. F433-004-2:2018	Blasting and Painting Operation L2
	26. F433-004-3:2018	Blasting and Painting Operation Supervision L3
	27. PTD1	Building Decorative Painter L1 (2002)
	28. PTD2	Building Decorative Painter L2 (2002)
	29. PTD3	Building Decorative Supervisor L3 (2002)
	30. PTD4	Building Painting Project Coordinator L4 (2002)
	31. PTD5	Building Painting Manager L5 (2002)
	32. PTC1	Building Architectural Coating Applicator L1 (2002)
	33. PTC2	Building Architectural Coating Applicator L2 (2002)
	34. F433-003-2:2018	IBS Steel Structure System Installation L2
	35. F433-003-3:2018	IBS Steel Structure System Installation Supervision L3
439 – Other Specialized Construction Activities	1. F439-001-3:2017	Crane Operations L3
	2. F439-002-2:2017	Landscape Construction L2
	3. F439-002-3:2017	Landscape Construction Supervision L3
	4. BC-056-3:2014	Lifting Operation (Rigging & Slinging) L3

MSIC Group	Corresponding NOSS/ Level	
	5. BC-055-1	Winchman L1 (2012)
	6. BC-055-2	Senior Winchman L2 (2012)
	7. BC-055-3	Winchman Supervisor L3 (2012)
	8. SCF4	Scaffold Inspector L4 (2008)
	9. SCF5	Scaffold Manager L5 (2008)
	10. BC-061-1:2015	Basic Scaffold Erection, Alteration and Dismantling L1
	11. BC-061-2:2015	Intermediate Scaffold Erection, Alteration and Dismantling L2
	12. BC-061-3:2015	Advanced Scaffold Erection, Alteration and Dismantling L3
	13. BC-062-2:2015	Piling Operation L2
	14. BC-062-3:2015	Piling Site Supervision L3
	15. BC-067-2:2016	Ready Mixed Concrete (RMC) Plant Operations L2
	16. BC-067-3:2016	Ready Mixed Concrete (RMC) Plant Operations Supervision L3
	17. F439-003-2:2018	Plant Machinery Operations L2
	18. F439-003-3:2018	Plant Machinery Operations Supervision L3
	19. TRH2	Off Highway Truck Operator L2 (2008)
	20. SCR2	Scraper Operator L2 (2008)
	21. BKP2	Back Pusher Operator L2 (2008)
	22. TCM2	Telescopic Material Handler L2 (2008)
	23. PUC2	Concrete Pump Operator L2 (2008)
	24. RPT2	Pneumatic Tyre Roller Operator L2 (2008)
	25. MTC2	Cold Metal Operator L2 (2008)
	26. PVR2	Paver Operator L2 (2008)
	27. SSL2	Skid Steer Loader Operator L2 (2008)
	28. RLC2	Compactor Roller Operator L2 (2008)
	29. MC-074-1	Assistant Fabricator (Structure) L1 (2012)
	30. MC-074-2	Fabricator (Structure) L2 (2012)

MSIC Group	Corresponding NOSS/ Level	
	31. MC-074-3	Fabrication Supervisor(Structure) L3 (2012)
	32. OG-026-2:2016	Electrical Fitting (Oil & Gas) L2
	33. OG-026-3:2016	Electrical Fitting (Oil & Gas) L3
	34. OG-026-4:2014	Electrical Project Coordination (Oil & Gas) L4
	35. OG-026-5:2014	Electrical Project Management (Oil & Gas) L5
	36. OG-027-2:2016	Instrument Fitting (Oil & Gas) L2
	37. OG-027-3:2016	Instrument Fitting (Oil & Gas) L3
	38. OG-027-4:2014	Instrumentation Project Coordination (Oil & Gas) L4
	39. OG-027-5:2014	Instrumentation Project Management (Oil & Gas) L5
	40. OG-028-2:2016	Mechanical Fitting (Oil & Gas) L2
	41. OG-028-3:2016	Mechanical Fitting (Oil & Gas) L3
	42. OG-028-4:2016	Mechanical Project Coordination (Oil & Gas) L4
	43. OG-028-5:2016	Mechanical Project Management (Oil & Gas) L5
	44. OG-036-2:2016	Habitat System Installation, Monitoring and Handling L2
	45. OG-036-3:2016	Habitat System Operation Supervision L3
	46. W-011-3	Senior Terminal Operator(Gantry Crane) L3 (1998)
	47. W-012-3	Senior Terminal Operator (Rubber Tyred Gantry Crane) L3 (1998)
	48. W-010-2	Terminal Operator(Front End Loader & Reach Stacker) L2 (1998)

2.7 Overview of Construction Sector in Developed Countries

This section provides an overview regarding developed countries in specialized construction activities. Construction industry is one of the main industry that contribute to the economy in most of the country in the world. This industry has provided jobs to millions of people. For the overview, the country selected are United Kingdom, and Sweden. The selection on the countries is due to the rapid development in specialized construction activities. The UK is among the top country in the world that invest in the construction where USD1107.30 billion worth of structures are completed and the GDP increased 5.2 per cent. Whereas, construction in Sweden amounts to USD 80 billion per annum and contributes 9 per cent of the GDP. The complete comparison between these countries are listed in Chapter 4.

2.8 Relation of Industry and Industrial Revolution 4.0 (IR4.0)

The Fourth Industrial Revolution is used to describe the emergence of the Digital Economy and use of automation and data exchange in industrial technologies. Commonly referred to with the catchphrase Industry 4.0 it also included the Internet of Things (IoT) and collaboration between network machines and human beings in decision-making.

Technology experts talk about future industrial revolution as one that has the potential to disrupt every industry in every country due to the exponential pace that is the nature of digital revolution which is at the heart of Industrial Revolution 4.0. This is already happening in businesses and industries as robotics and artificial intelligence can take over jobs traditionally manned by human labour, in particular technical processes that can easily be computerized. Figure 2.9 depicts the progression of the industrial revolution.



Figure 2.9: Industry Revolution 4.0

(Source: Five steps to a successful digital transformation)

IR4.0 is a technological revolution, which starts from the First Industrial Revolution to the Third Industrial Revolution. Briefly, the First Industrial Revolution used water and steam power to mechanise production. The Second revolution used electric power to create mass production. The Third used electronics and information technology to automate production. The Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion and convergence of technologies that cut across the physical, digital, and biological spheres.

According to the Ministry of International Trade and Industry (MITI), there are nine (9) main pillars of Industrial Revolution 4.0 which actually reflect more on the different technologies used in an Industrial Revolution 4.0 environment, are shown in Table 2.9.

Table 2.9: The 9 Pillars of Industrial Revolution 4.0

(Source: Ministry of International Trade and Industry)

NO.	9 PILLAR OF IR4.0	DESCRIPTION
1.	Autonomous Robots	Coordinated and automated actions of robots to complete tasks intelligently, with minimal human input.

NO.	9 PILLAR OF IR4.0	DESCRIPTION
2.	Big Data Analytics	The analysis of ever larger volumes of data. Circulation, collection, and analysis of information is a necessity because it supports productivity growth based on a real-time decision-making process.
3.	Cloud Computing	Storing and accessing data and programs over the Internet instead of your computer's hard drive.
4.	Internet of Things	All machines and systems connected to the production plant (as well as other systems) must be able to collect, exchange and save these massive volumes of information, in a completely autonomous way and without the need of human intervention.
5.	Additive Manufacturing	Use in prototyping, design iteration and small-scale production and often described as "rapid prototyping" – produce the desired components faster, more flexibly and more precisely than ever before.
6.	System Integration	The process of linking together different computing systems and software applications physically or functionally to act as a coordinated whole via Internet of Things.
7.	Cybersecurity	The increased connectivity and use of standard communications protocols, the need to protect critical industrial systems and manufacturing lines from cybersecurity threats is increasing.

NO.	9 PILLAR OF IR4.0	DESCRIPTION
8.	Augmented Reality	Augmented-reality-based systems support a variety of services, such as selecting parts in a warehouse and sending repair instructions over mobile devices – provide workers with real-time information to improve decision making and work procedures.
9.	Simulation	Simulations will leverage real-time data to mirror the physical world in a virtual model, which can include machines, products, and humans. This allows operators to test and optimize the machine settings for the next product in line in the virtual world before the physical changeover, thereby driving down machine setup times and increasing quality.

The elements of IR 4.0 that related to construction sector are the autonomous robot, Internet of Thing (IoT), big data, cloud computing and additive manufacturing. Only recently the digital technologies begun to enter the industry, gradually changing how infrastructure, real estate and other built assets are designed, constructed, operated and maintained. These technologies, including building information modeling, prefabrication, wireless sensors, 3D printing and automated and robotic equipment, are affecting the entire industry.

2.9 Conclusion

Based on the literature review findings, the area of specialized construction activities is seen as one of the main contributors to the economic performance and foreign investment in Malaysia. Currently there are several government agencies (i.e. MoW, JKR, CIDB) involved in the development and monitoring of the industry in terms of compliance to the relevant acts and regulations.

In order to increase employment mobility for the workforce, it is imperative that the occupational areas are redefined in the Occupational Structure. This is to allow scalability of skills and to accommodate the emerging skills required in the current industrial revolution (IR4.0). Segmentation of the industry based on the MSIC 2008 is also taken into consideration in order to be in sync with data on labour demographics from the Department of Statistics Malaysia.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This section gives an overview of the overall research design, strategies for data collection and data analysis procedures performed to meet the deliverables. In developing a better comprehend of the current development of specialized construction activities industry in Malaysia, this study used multiple data collection approaches. Besides document analysis, mixed method research that involves quantitative and qualitative approaches were utilised. The quantitative approach was embedded by using survey questionnaire while the qualitative approach was based on document analysis and focus group discussion with industry experts. By using both methods, better insights of the industry were obtained where identification and building appropriate instrument for the quantitative data collection approach.

3.2 Research Approach

For this study, the research approach was subjected to 7 phases as follows:

Phase 1: Identification of Research Problem

Broad problem area was identified through preliminary information gathered from secondary data and literature reviews.

Phase 2: Document Analysis

Perform actual secondary data collection by reviewing available published information from sources such as websites, archives and other written reports.

Phase 3: Preparation of Qualitative Data Procedure

The interview protocol was in the form of semi-structure questionnaire that was prepared in line with the objective of this study. The interview protocol was developed by the researchers themselves. The validity of this study was verified by employing the triangulation strategy. In this approach, the researchers triangulated different data sources of information to build a coherent justification of the different themes in close relation to the aim of the study. Focus group discussion was conducted where respondents from industry experts and practitioners were chosen.

Phase 4: Quantitative Instrument Building

From the focus group discussion, the reliable instrument was verified and proposed to be used in the actual field survey.

Phase 5: Quantitative Data Collection

Actual data collection were carried out. Both self-administrated and survey was carried out nationwide for generalisation purpose. Sample from the population were collected at random in order to reflect an objective representation.

Phase 6: Data Analysis for Both Qualitative and Quantitative Data Approaches

Final verification by focus group discussions was carried out. New focus group members were selected from industry players who looked into the documents. They were also requested to verify the descriptive analysis that was utilised in the quantitative approach. The issues of concern were related to the demand for skills, jobs titles and critical task skills levels in the specialized construction activities industry.

Phase 7: Discussion and Recommendations

Final discussion on the study was established coupled with recommendations.

Specifically, three data collections approaches were employed as follows:

- a) Document analysis;
- b) Focus group discussion; and
- c) Survey.

3.2.1 Document Analysis

By conducting document analysis, the researcher examined the work of not only other researchers but also from professionals through trade reports, the Internet and articles to get a better insight into the industry and address the research aim. This approach provides an overview of the industry that is relevant to the requirements of IR4.0 and industrial need.

a) Data Collection Strategy

There were two main sources for data collection in document analysis namely:

- i) Economic Database; and
- ii) Database from other agencies (such as MESTECC and DSD).

i) Economic Database

Some information related to labour that are highly relevant to this study were collected. Thus, the following information were requested from the Department of Statistics Malaysia (DOSM):

- MSIC 2008; and
- Occupation categories at 1-digit MASCO 2013.

The information from the economic database serves two purposes:

- Provides a snapshot of the current specialized construction activities industry landscape and outlook; and
- Serves as control figures and baseline database when assessing data obtained from the online survey.

ii) Database from Other Agencies (RMK 11, DSD and others)

In addition, economic databases from other agencies (local and international) that are relevant to the specialized construction activities were collected and analysed. Based on our initial observation, the following database contained relevant information for the industry:

- Local database, namely DSD, MITI, mid-term review of RMK11, Budget and MIDA; and

- International database, namely Organisation for Economic Co-operation and Development (OECD), World Bank, European Union (EU) and Economic Monitor.

Database in the form of online resources and published reports were collected from local and international agencies.

b) Data Analysis Procedure

Based on the two groups of databases, the following data analysis procedure were carried out:

- i) Examined the economic performance of the industry by looking at several macroeconomic indicators (such as GDP, employment and output);
- ii) Analysed the industry outlook in relation to regional and global perspectives;
- iii) Determined the profile of the current and future workforce (such as occupations); and
- iv) Reviewed technological development in the industry (such as robotic and automation as well as elements of IR4.0).

3.2.2 Focus Group Discussion

Industry engagement based on focus group discussion (FGD) was conducted to enable in-depth discussions on the issues of the industry workforce. Two phases of FGD were conducted. Initially the FGD discussed on the OS, OD, assessment of curriculum and training programmes; accreditation and qualification based on NOSS and MQA framework; potential workforce challenges; outlook and strategic recommendations to be proposed. From this discussion of the themes used the survey method instrument were reviewed based on the industrial feedbacks.

For the focus group discussion, six industry experts were selected. and facilitated by a facilitator to encourage dialogue among the panel members while controlling the discussion. Facilitators were commissioned by the DSD. In terms of industry experts, they have at least 7 years of experience in the related industry and worked with a company

that is registered with the *Suruhanjaya Syarikat Malaysia* (SSM). A transcriber was also employed to report on the FGD discussion outcome.

In the first FGD meeting, semi-structured questions were used. It was based on OS and OD construction based on four themes, namely competencies in demand, jobs in demand, emerging skills and related issues. The identification of critical jobs in the specialized construction activities industry was also be determined in the FGD. The second phase in FGD was for the verification and validation of the findings.

Five main semi-structured questions for FGD were constructed as follows:

- 1) What will the industry's OS look like?
- 2) What will be the OD for each job title?
- 3) How to determine the demand for industry skills?
- 4) How to determine the relevant job titles that are in line with IR4.0?
- 5) How to determine the critical jobs for the industry?

a) Data Collection Strategy

In the process of gathering the input, brainstorming technique was adopted in this FGD discussion. It was attended by industry expert on development panel members who discussed the different sub-sectors and areas of the industry. Facts obtained during the document search were also discussed and presented to the development panel members. The information gathered was then used as input for the OF subsector. The second meeting with a new FGD group was conducted after the data analysis result was obtained from field and online survey. The output from the surveys underwent verification from the experts in the FGD discussion. Figure 3.3 shows the proecess of the FGD.

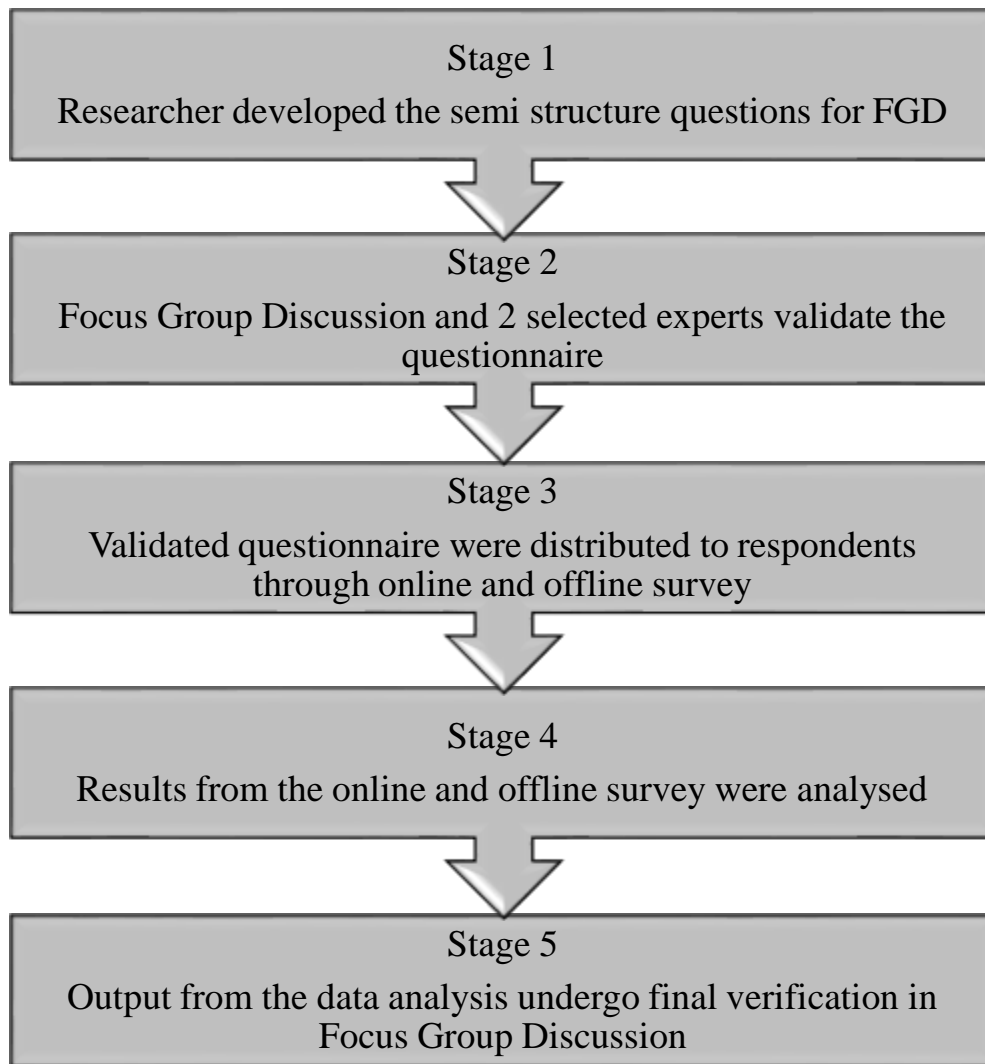


Figure 3.1: Flow chart of the Focus Group Discussion

3.2.3 Survey

This study employed self-administrated and online surveys to examine four keys information, namely competencies in demand, jobs in demand, emerging skills and related issues. Google form was used for the survey. The survey was distributed to the related organisations based on organisational level. The survey form was divided into 4 sections as follows:

Section 1: Competencies in Demand

This section explores the competencies that are required by the industry. Another objective of this section to figure out the skills gap and how to overcome the gap.

Section 2: Jobs in Demand

This section is aimed at determining which category of workers are in short supply or over-supply. The category is based on MASCO, for example, skilled workers, semi-skilled workers and low-skilled workers.

Section 3: Emerging Skills

This section tries to determine the readiness of industry players and the workers at the advent of IR4.0. The technology drivers or pillars of IR4.0 are listed and the respondents must decide the relevancy of each element in their line of duty.

Section 4: Related Issues

This section explores the common issues surrounding the industry. The respondents were asked to choose whether the issues are related to the industry.

a) Establishment and Sampling procedure

According to Roscoe (1975), sample size of 30 and less than 500 are appropriate for most research. Therefore, since the total population is 15,228 companies, the number of sample establishments is 72 and number of targeted respondents are 36. However, to minimize errors in sampling and to take care issues of non-response, the number of targeted respondents were doubled and a total of 72 questionnaires were distributed to selected companies or organisations. For respondent's response rate, based on Brauch, Y & Holtom, B.C (2008), the average level of response rate is 52.7 per cent. After data collected exercise was conducted, there are 51 totals of questionnaire collected. The targeted respondents were among the managerial levels in the related company and association in the industry or human resources director.

Based on sample size calculator software Raosoft, the sample size was calculated and the results was shown in Table 3.1. This research used 10% margin of error based on Weisberg & Bowen (1977) which stated 10% margin of error are acceptable for this kind of research.

This study adopted probability random sampling. Probability sampling design is chosen as opposed to non-probability sampling because of the need to generalize the findings of this study. This sampling design is also most suited for this study because each element in the establishment have the same probability of being chosen (Sekaran, 2004). This sampling technique only requires that the researcher has a list of all members of the establishment which allows him to get access to any member who might be chosen. Being simple it poses the least bias and offers the most generalizability and thus it is the best single way to obtain a representative sample (Sekaran, 2004).

Table 3.1: Number of Targeted Respondents According to MSIC Group

MSIC Section	F	Construction	Number of Establishment	Number of Sample Establishment	Number of Targeted Respondents	Number of Actual Respondents
MSIC Division	43	Specialized Construction Activities				
MSIC Group	431	Demolition and site preparation	904	72	36	51
	432	Electrical, plumbing and other construction installation activities	7,513			
	433	Building completion and finishing	4,424			
	439	Other specialized construction activities	2,387			

b) Questionnaire design

For this study, the questionnaires were designed from the first focus group discussion's feedback based on the four key important elements, which are competencies in demand, jobs in demand, emerging skills and related issues. To increase the response rate and consistent responses, the questionnaire was designed based on close-ended questions on interval scale appropriate to the instrument. Content validity and face validity were employed. Content validity were performed in the pre-test stage by two experts from academic and industry sectors. They were expected to identify the content, grammar, phrasing of sentences and comprehend of the items used. After the pre-testing stage is completed, a pilot test was conducted to pre-test the instruments for this study. 10 respondents were chosen and none of the items required modification.

c) Measures and Instrumentation

For this study, the sections of questionnaire are divided into 4 sections which are section 1, section 2, section 3 and section 4. Section 1 discussed regarding competencies in demand and 4-interval scale to measure the intensity of job demands against the supply or labour. The 4-interval scale range is as follows:

- 4 – High in demand;
- 3 – Mid in demand;
- 2 – Low in demand; and
- 1 – Not in demand

Section 2 discussed jobs in demand that used the 4-interval scale mentioned earlier to measure the shortage of manpower in the specialized construction activities industry.

In Section 3, emerging skills were discussed. It contains close-ended questions using 4-interval scale mentioned earlier to measure the important prerequisites and skills for IR4.0 in the specialized construction activities industry.

For the last section which is Section 4, related issues regarding the industry was discussed using 4-interval scales ranging from strongly agree, agree, disagree and strongly disagree were used to measure key issues in the specialized construction activities industry.

d) Data Analysis Strategy

Costing is an important consideration that influences the determination of sampling size for a primary survey. The population of the industry is large and this required a significant financial budget if a nationally representative survey is the primary target. The consultation with related associations concluded that a nationally representative survey was not be feasible. Instead of aiming for a nationally representative sample, the survey aims to increase only participation rates from the industry.

Three strategies to increase the number of responds for the data collection were utilized as follows:

- i) Targeted of associations' members. The secretariat of each association has agreed to distribute the questionnaire;
- ii) Industry engagements/interviews/visits were scheduled over a period 2 months to seek their assistance to answer the survey and distribute to the members of the respective associations; and
- iii) Assistance from related government agencies to provide institutional support when engaging the selected respondents.

To lessen the bias in the survey procedure as suggested by Armstrong and Overton (1977), extrapolation method was employed. Non-response bias (error) occurred when respondents vary in significant ways from the non-respondents in the research (Sekaran, 2013) which is common in self-administred and via mail survey method (Armstrong & Overton, 1977; Groves, 2002). For this study, personal distribution of survey questionnaire was employed for the data collection. To overcome the non-response from respondents usually occur when respondents declined to answer or have language problems (Groves, 2002).

Thus, to encourage good response rates from the respondents, a token of appreciation was given to respondents for each questionnaire completed.

e) Data Analysis Procedure

The following analyses were obtained from the survey;

- i) Analysis of critical occupations identified by the industry;
- ii) Analysis of future trend of the occupational demand by various skills category including TVET related occupations;
- iii) Analysis of talent gaps between supply and demand according to NOSS and MQA standards; and
- iv) Analysis of training provided by industries to employees.

3.3 Conclusion

The selected research approach were document analysis, survey and questionnaire, and focus group discussion. Document analysis was chosen due to its efficient and effective way of gathering data. This is because the documents can easily be manageable and were practical resources. Documents can be obtained from a commonplace but maybe come in a variety of forms, but are easily accessible and reliable source of data. Besides, obtaining and analysing documents is often far more cost efficient and time efficient than conducting the research. Consequently, document analysis is a suitable method in this research because of its requirement for current statistics in related industries as well as to study the industry's growth. Another research approached is Focus group discussion to allow free and open discussion among the respondents, that generated new ideas that well useful in decision-making. It is also a fast way to gain the needed information regarding job titles in the related industries. This approach was the advantage of time saving and an effective way to gather information from many sources. Besides, survey and questionnaire were also deployed in this research where questionnaires may be taken due to anonymously of respondents. It is an effective way for gathering some sensitive information when is required. Consequently, the shorter and more concise is the questionnaire and the more specific is the group of respondents, the results will be more effective.

CHAPTER 4: FINDINGS

4.1 Introduction

This chapter elaborates the findings from the research works on 2 digits MSIC 2008 Division 43: Specialized Construction Activities. The findings revolve around the objectives set for the study namely; to produce Occupational Structure (OS) from data analysis, and Focus Group Discussion (FGD); to determine job descriptions of each job title from the OS; and to investigate the competencies in demand in the sector.

4.2 Findings Analysis

This section provide the summarises of the data collected. It involves the interpretation of data gathered through the questionnaires and response from the related industry. The questionnaires data are eventually be correlated with the findings from the focus group discussion and document analysis to determine patterns, relationships or trends.

4.2.1 Discussion of Results

The findings of this research were obtained by document analysis, FGD with the industry representative during the development workshops, and industry survey/ questionnaire. The discussions have identified the jobs and competencies in demand, and skills gaps that is needed by the industry. These analysis were discussed based on the main groups in Division 43 which is specialized construction activities.

Research instruments used were FGD, document analysis and survey. The initial information is gathered by using document analysis and used as the basis for the FGD workshop. Then, the survey is distributed to gain more information related to the discussion and also to validate the data obtained from FGD and document analysis.

During the FGD workshops, the information on specialized construction activities was analysed and grouped into four group based on 3 digits MSIC 2008 Group which are:

- a) Group 431: Demolition and site preparation
- b) Group 432: Electrical, plumbing and other construction installation activities
- c) Group 433: Building completion and finishing
- d) Group 439: Other specialized construction activities

Even though the survey distributed did not cover all 15,228 company in specialized construction activities industry, it included companies of all sizes from all states in Malaysia. Thus, the results of the survey from 51 respondent do represent most of the issues regarding specialized construction activities industry in Malaysia.

4.2.2 Jobs in Demand

Job in demand by industry definition are the job that required more worker in certain area, however the supply of the workforce for the industry is low. Jobs in demand are very important to determine what are the job titles that are demand by the industry. The findings from FGD as described in Table 4.1 has identified the job titles such as General worker, Pipe fitter, Mechanical fitter, Pipe fitter, Wireman, Machine Operator, Handyman, Technician, Installer, Supervisor, Chargeman, Engineer, Architect, Manager, Director are the job that in demand for specialized construction activities.

Table 4.1: Jobs in Demand for Specialized Construction Activities

NO.	JOB TITLES	FACTOR(S) CONTRIBUTING TO THE DEMAND	SPECIFIC REQUIREMENTS AND SKILLS
1.	General worker, pipe fitter, mechanical fitter, pipe fitter, wireman	a) Difficulties in recruiting local workers due to terms and condition of the job being offer (salary scheme, working hour).	a) Demand for permanent job. b) Normal working hours. c) Able to adapt with work pressure. d) Able to interpret instructions and simple diagrams.

NO.	JOB TITLES	FACTOR(S) CONTRIBUTING TO THE DEMAND	SPECIFIC REQUIREMENTS AND SKILLS
		b) Work pressure. c) Lack of social skills.	e) Communication skills.
2.	Machine Operator, Handyman, Technician, Installer, Supervisor	a) Mismatch of qualification, knowledge and required skills to perform the job function. b) High salary expectation. c) Limited requirement for personnel in the sector.	a) Qualification which is relevant to the job function. b) Knowledge which is required to perform the job function. c) Skills which is required to execute the task.
3.	Chargeman, Engineer, Architect, Manager, Director	a) Mismatch of qualification, knowledge and required skills to perform the job function. b) High salary expectation. c) Limited requirement for personnel in the sector. d) Technology advancement.	a) Qualification which is relevant to the job function. b) Knowledge which is required to perform the job function. c) Skills which is required to execute the task. d) Operation, leadership and management skills. e) Knowledge on current or latest technology. f) Team work, and communication skills.

Based on the survey distributed, it was observed that most of the respondent agree that most jobs in demand for the specialized construction activities of the demolition and site preparation works, electrical installation works, plumbing installation works, mechanical installation work, architectural works, external works and subsurface works are for the skilled workers followed by semi-skilled workers and low skilled workers as shown in Figures 4.1 to Figure 4.7.

Figure 4.1 shows jobs in demand for demolition and site preparation, based on the data survey obtained by 51 respondents. 31 respondents agree that skilled worker are high in demand, 25 respondents agree that semi-skilled worker are also high in demand, while 32 respondent agreed that low skilled worker are low in demand. From these, it can be concluded that for the demolition and site preparation, the skilled and semi-skilled worker are the most demand category of workers, while the low skilled worker are low in demand.

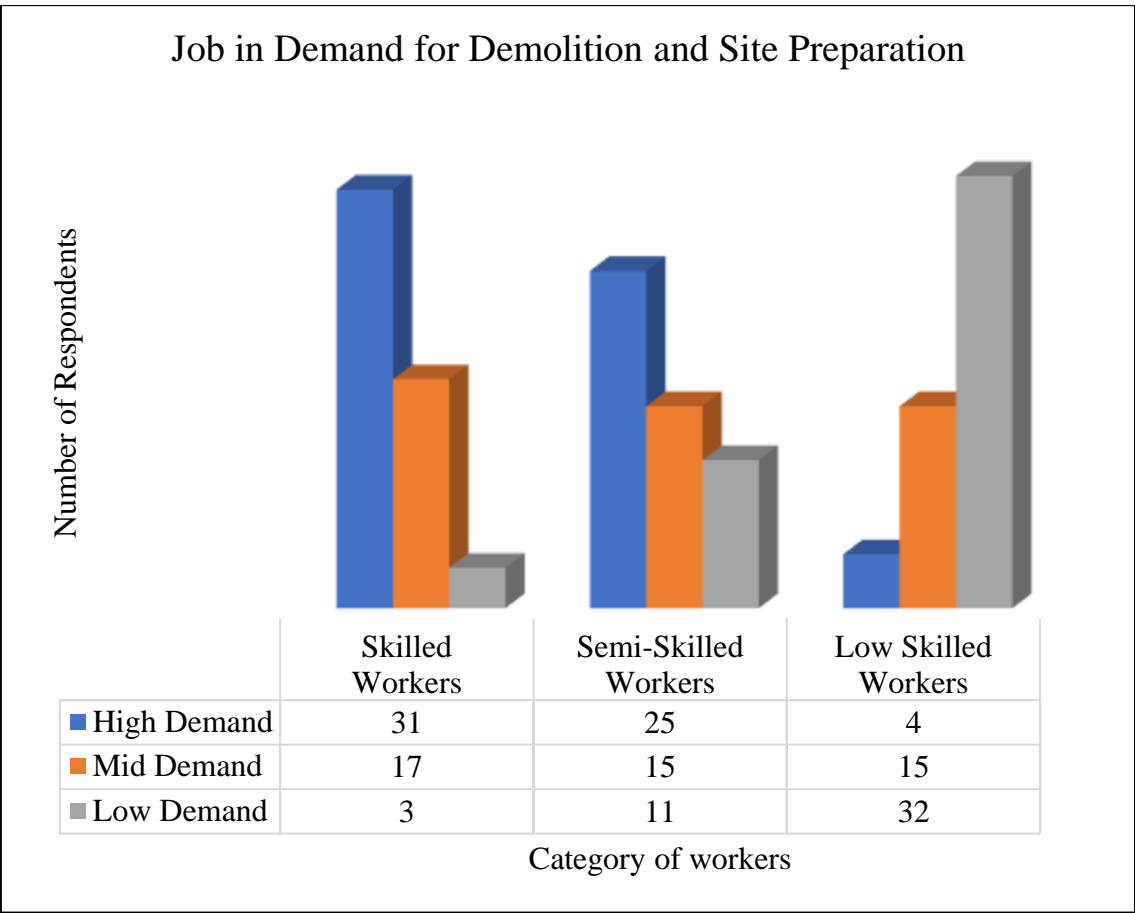


Figure 4.1: Job in Demand for Demolition and Site Preparation

Figure 4.2 shows jobs in demand for electrical installation works. Based on the data survey obtained, 33 respondents agree that skilled worker are high in demand, 37 respondents agree that semi-skilled worker are also high in demand, while 36 respondents agree that low skilled worker are low in demand. From these, it can be concluded that for electrical installation works, both skilled and semi-skilled worker are high in demand, while low skilled worker are low in demand for this job area.

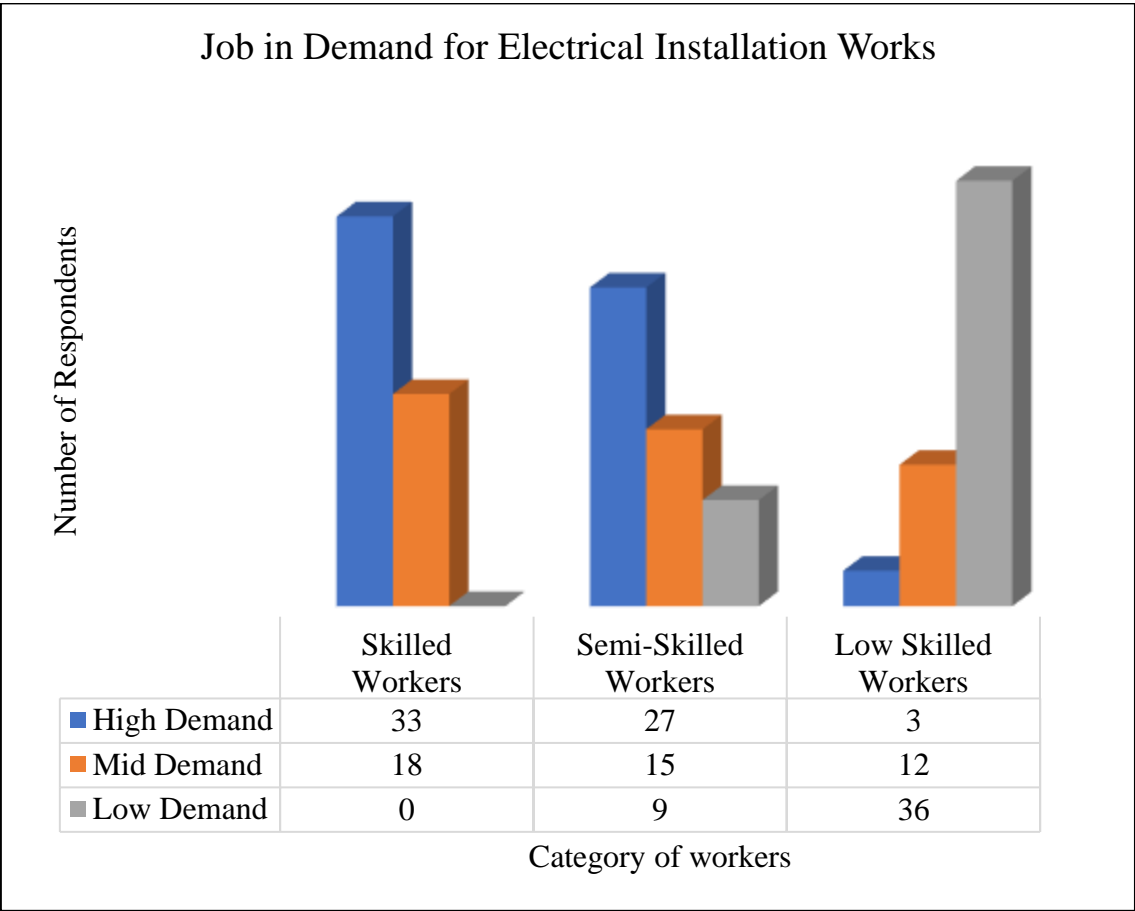
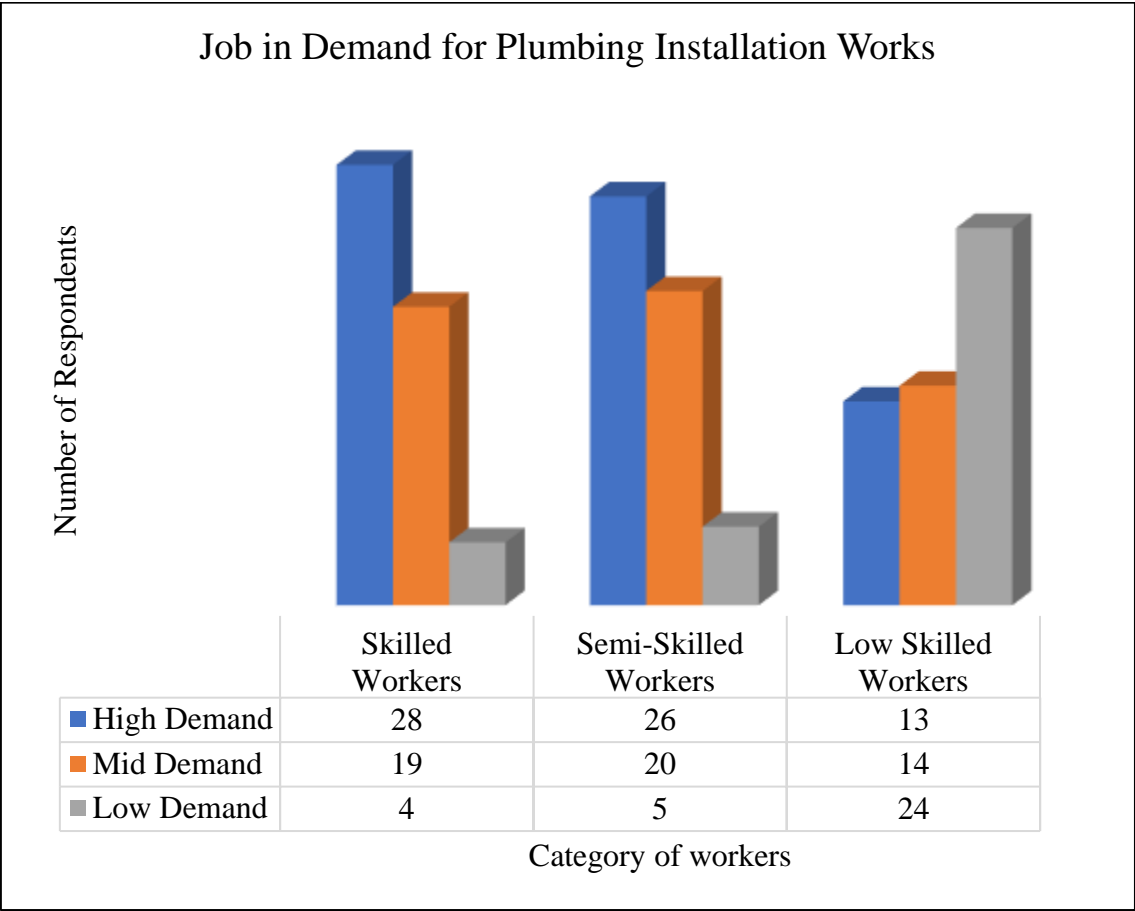


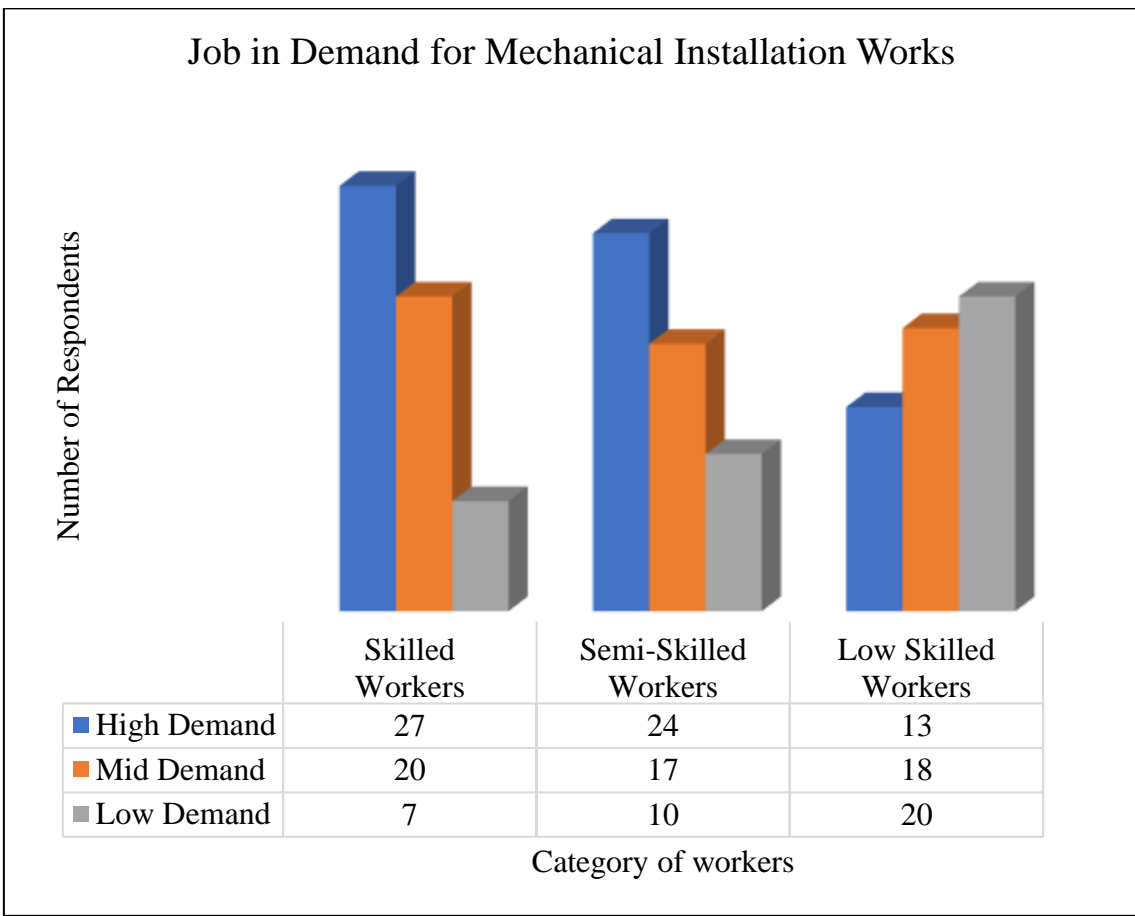
Figure 4.2: Job in Demand for Electrical Installation Works

Figure 4.3 shows jobs in demand for plumbing installation works. Based on the data survey obtained, 28 respondents agree that skilled worker are high in demand, 26 respondents agree that semi-skilled worker are also high in demand, while 24 respondents agree that low skilled worker are low in demand. From these, it can be concluded that for plumbing installation works, the demand by industry for category of worker are more on skilled and semi-skilled worker, while low skilled worker for plumbing installation work are low in demand.



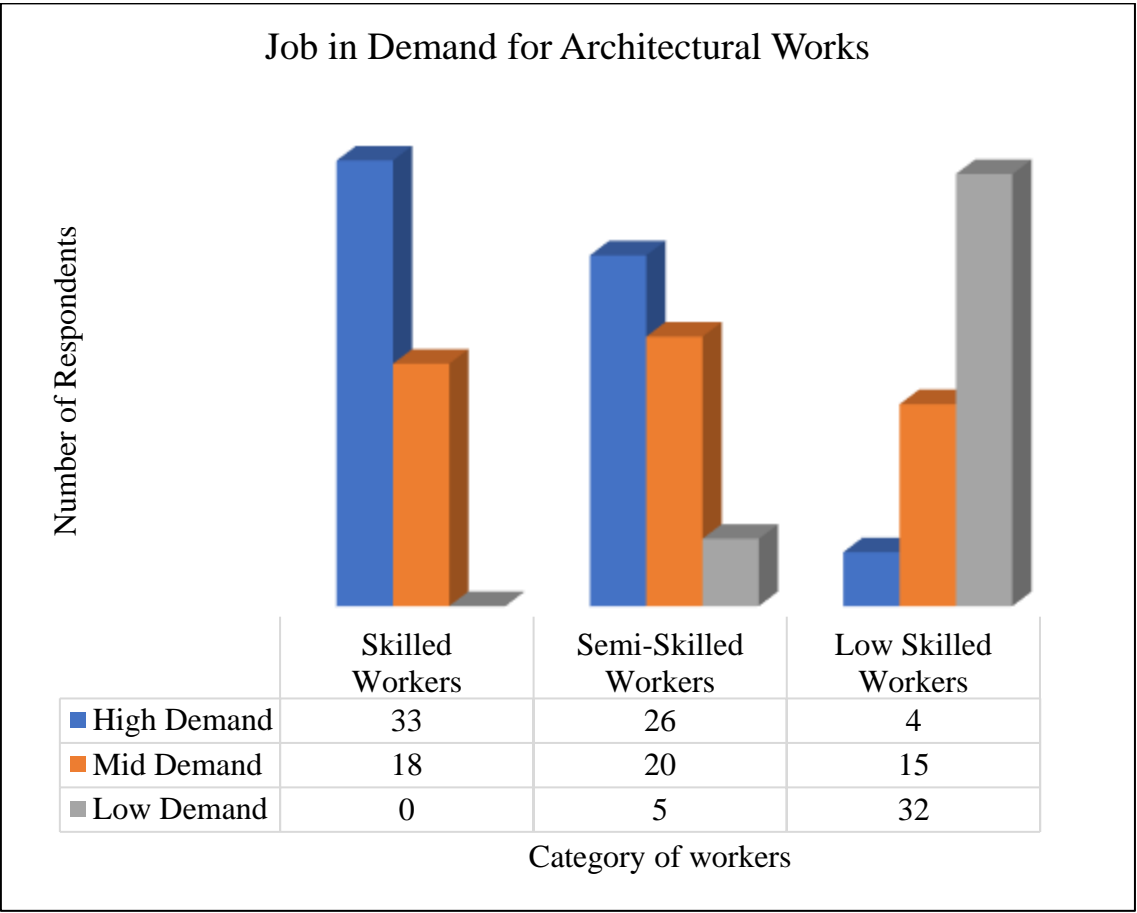
Figures 4.3: Job in Demand for Plumbing Installation Works

Figure 4.4 shows jobs in demand for mechanical installation works. Based on the data survey obtained, the respondents agreed that skilled worker and semi-skilled worker are high in demand with a number of respondents of 27 and 24 respectively. For the low skilled worker, 20 respondents agree that this category of worker are low in demand. From these, it can be concluded that for the mechanical installation works, there are high job in demand are for skilled and semi-skilled worker followed by low skilled worker.



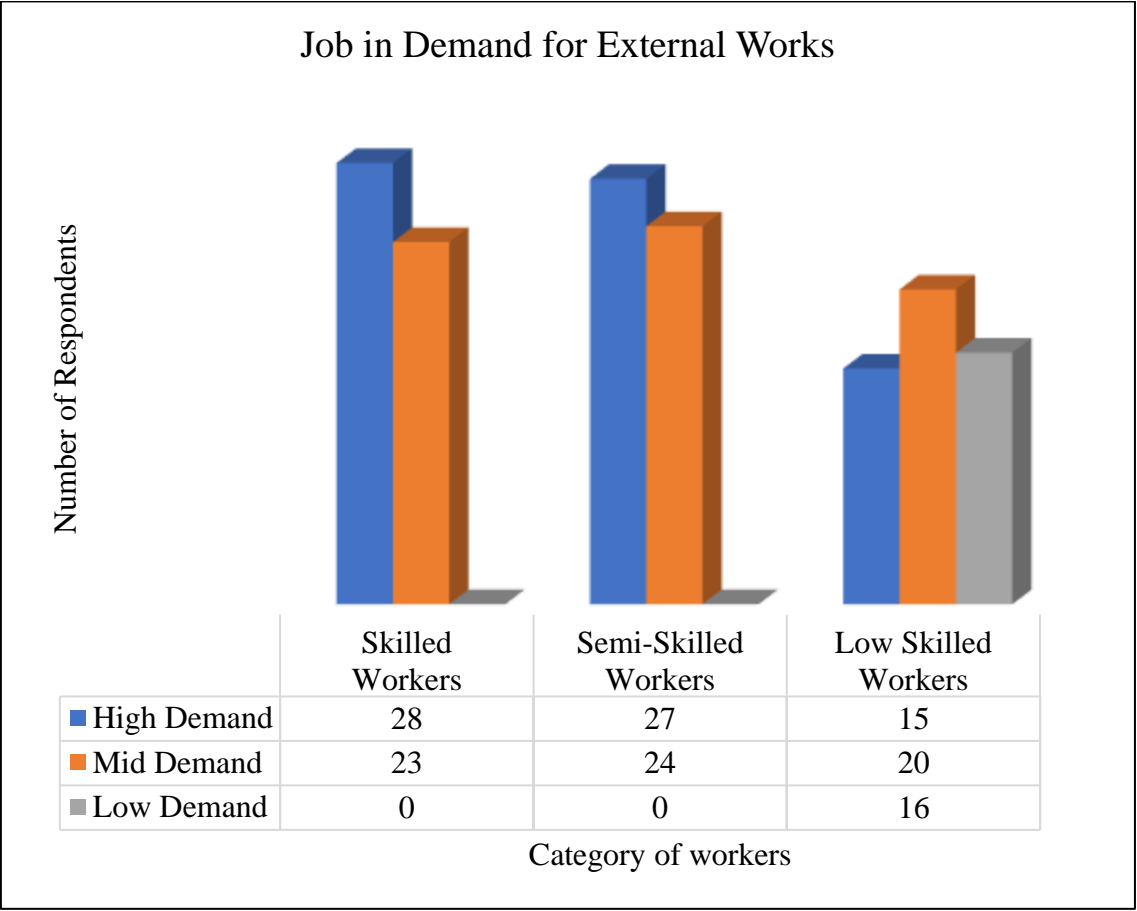
Figures 4.4: Job in Demand for Mechanical Installation Works

Figure 4.5 shows jobs in demand for architectural works. Based on the data survey obtained, the skilled worker and semi-skilled worker are the high in demand with a respondent of 33 and 26 respectively. While for low skilled worker, only 32 respondent agreed that this category worker are low in demand. From these, it can be concluded that for architectural works, the skilled are the most demanded category of workers, followed by semi-skilled worker, while low skilled worker are low in demand for this job area.



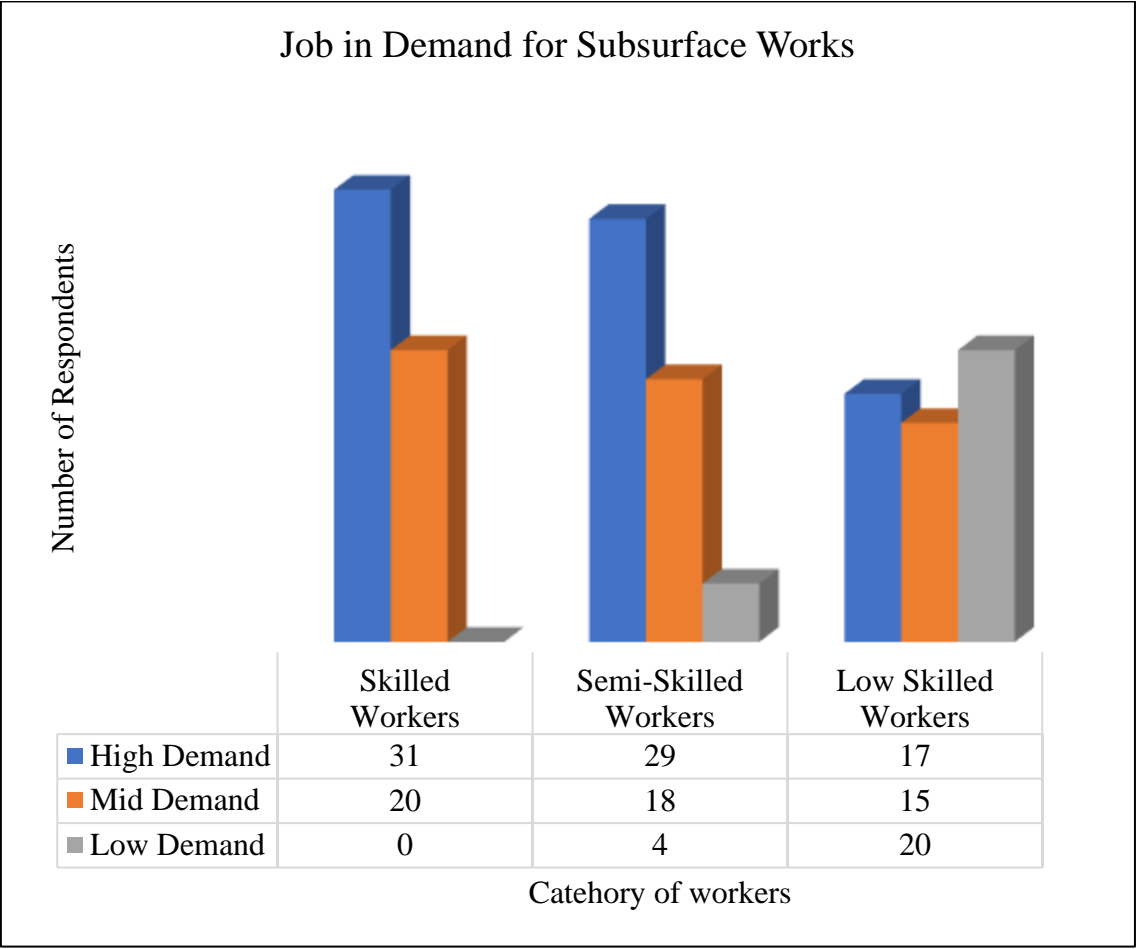
Figures 4.5: Job in Demand for Architectural Works

Figure 4.6 shows jobs in demand for external works. Based on the data survey obtained, 28 respondents agree that skilled worker are high in demand, 27 respondent agree that semi-skilled worker are also high in demand and 20 respondent agree that low skilled worker are in demand. From these, it can be concluded that skilled and semi-skilled are high in demand for the external works area, followed by low skilled worker which is mid in demand.



Figures 4.6: Job in Demand for External Works

Figure 4.7 shows jobs in demand for subsurface works. Based on the data survey obtained, it is agreed that the skilled worker and semi-skilled worker are high in demand with a number of respondent of 31 and 29 respectively. As for the low skilled worker, 20 respondent agreed that low skilled worker are low in demand. From these, it can be concluded that for the subsurface work have a high demand for skilled and semi-skilled worker.



Figures 4.7: Job in Demand for Subsurface Works

The result from the focus group discussion and the responds from the survey, it can be concluded that the job in demand in specialized construction activities are mainly from skilled and semi-skilled worker which correspond to level 2 and above from OS.

The OS produced in specialized construction activities are mapping between e-MASCO and Critical Occupational List (COL) are shown in Table 4.2. Based on the total number of 67 critical job title identified from the FGD, there are 38 critical job titles that are related to E-Masco and 27 available critical job titles in COL.

Table 4.2: Critical Job Title vs e-MASCO vs COL

NO	CRITICAL JOB TITLE	OCCUPATIONAL STRUCTURE	e-MASCO	COL
1	Site Engineer	√	√	√
2	Assistant Site Engineer	√	X	X
3	Site Supervisor	√	√	X
4	Technician	√	√	√
5	General Worker	√	√	X
6	Electrical Engineer	√	√	√
7	Assistant Electrical Engineer	√	√	X
8	Electrical Supervisor	√	√	√
9	Technician	√	√	√
10	Wireman	√	√	√
11	Electrical Engineer	√	√	√
12	Assistant Electrical Engineer	√	√	X
13	Electrical Supervisor	√	√	√
14	Technician	√	√	√
15	Wireman	√	√	√
16	Electrical Engineer	√	√	√
17	Assistant Electrical Engineer	√	√	X
18	Electrical Supervisor	√	√	√
19	Technician	√	√	√

NO	CRITICAL JOB TITLE	OCCUPATIONAL STRUCTURE	e-MASCO	COL
20	Wireman	√	√	√
21	Mechanical Engineer	√	√	√
22	Assistant Mechanical Engineer	√	X	X
23	Mechanical Supervisor	√	X	X
24	Technician	√	√	√
25	Pipe Fitter	√	√	X
26	Mechanical Supervisor	√	X	X
27	Mechanical Supervisor	√	X	X
28	Mechanical Supervisor	√	X	X
29	Mechanical Supervisor	√	X	X
30	Mechanical Engineer	√	√	√
31	Assistant Mechanical Engineer	√	X	X
32	Mechanical Supervisor	√	X	X
33	Technician	√	√	√
34	Mechanical Fitter	√	X	X
35	Mechanical Supervisor	√	X	X
36	Mechanical Supervisor	√	X	X
37	Mechanical Supervisor	√	X	X
38	Mechanical Engineer	√	√	√
39	Assistant Mechanical Engineer	√	X	X
40	Mechanical Supervisor	√	X	X
41	Technician	√	√	√
42	Mechanical Fitter	√	X	X
43	Mechanical Engineer	√	√	√

NO	CRITICAL JOB TITLE	OCCUPATIONAL STRUCTURE	e-MASCO	COL
44	Assistant Mechanical Engineer	√	X	X
45	Mechanical Supervisor	√	X	X
46	Technician	√	√	√
47	Mechanical Fitter	√	X	X
48	Mechanical Supervisor	√	X	X
49	Mechanical Supervisor	√	X	X
50	Mechanical Supervisor	√	X	X
51	Mechanical Supervisor	√	X	X
52	Architect	√	√	X
53	Assistant Architect	√	√	X
54	Supervisor	√	√	√
55	Installer	√	√	X
56	General Worker	√	√	X
57	Mechanical Engineer	√	√	√
58	Assistant Mechanical Engineer	√	X	X
59	Mechanical Supervisor	√	X	X
60	Technician	√	√	√
61	Mechanical Fitter	√	X	X
62	BIM Modeller	√	X	X
63	Site Engineer	√	√	√
64	Assistant Site Engineer	√	X	X
65	Site Supervisor	√	√	X
66	Machine Operator	√	√	√
67	General Worker	√	√	X
Total		67	38	27

4.2.3 Competencies in Demand

The competency in demand are the skills required to do the things that are involved in a particular job. The competency are ability to do something successfully or efficiently. In this industry, the skills/ competency in demand are not limited at the graduates/ trainee/ internship or apprentice, but it is include the current workers which are known as the skills gap. To get these skills its need to have had either the right training or the right experience, or sometimes both. For competencies in demand, the result of FGD group in Table 4.3 shows the list of competency skill which are considered as crucial for the industry.

Table 4.3: Competency in Demand for Specialized Construction Activities

NO.	COMPETENCIES IN DEMAND	FACTOR(S) CONTRIBUTING TO THE DEMAND	SPECIFIC REQUIREMENTS AND SKILLS
1	<ul style="list-style-type: none"> a) Administration and managerial skills b) Planning and forecasting abilities c) Knowledge in rules, regulations & Acts d) Material approach knowledge e) Training and coaching 	<ul style="list-style-type: none"> a) No structured system to transfer skill to new successor b) Lack of exposure on process c) Lack of hands-on experience on process 	<ul style="list-style-type: none"> a) Training on related or similar areas b) Review of training syllabus at training centre/ provider c) Review of training delivery mode (example applying dual system training) d) Joint venture with industry player to provide facilities and exposure e) Invite industry player to jointly carry out R&D programmes

NO.	COMPETENCIES IN DEMAND	FACTOR(S) CONTRIBUTING TO THE DEMAND	SPECIFIC REQUIREMENTS AND SKILLS
2	a) Troubleshooting / problem solving skills. b) Technical skills c) Analytical skills d) General attitude towards work e) Product knowledge f) Strong technical aptitude / manual dexterity g) Machinery knowledge & skill h) Safety and security i) Housekeeping knowledge	a) Lack of hands-on practical experience b) Lack of youth involvement c) No established written procedure on handling such product d) No established written material on latest technology for reference	a) Training on related or similar areas b) Review of training syllabus at training centre/ provider c) Joint venture with industry player to provide facilities and exposure d) Invite industry player to jointly carry out R&D programmes.

Based on the survey distributed, the highest competencies in demand are Knowledge in OSHA & Environment, Administration & management skills, Planning and forecasting abilities and General attitude towards work are the main competency in demand in specialized construction activities. Other common answers obtained through the survey are technical skills, machinery knowledge & skill, housekeeping knowledge and knowledge in rules, regulations, & Acts. The result of the survey are provided in the Figure 4.8 below and the description of it Table 4.4.

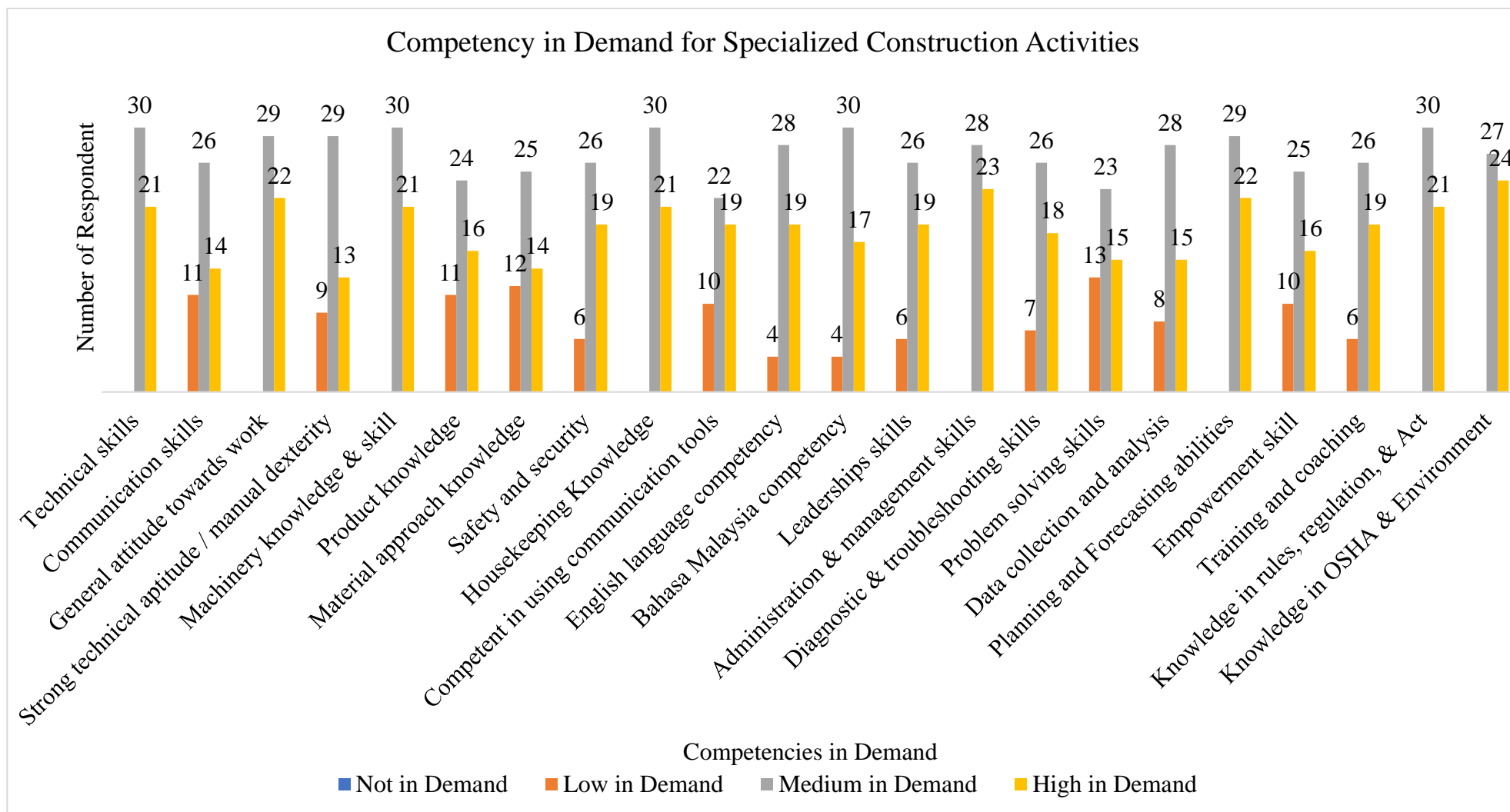


Figure 4.8: Competency in Demand for Specialized Construction Activities

Table 4.4: List of Competency Description

COMPETENCY SKILL	DESCRIPTION
Technical skills	The abilities and knowledge needed to perform specific tasks.
Communication skills	The ability to convey or share ideas and feelings effectively.
General attitude towards work	The set of evaluations of job that constitute feelings toward, beliefs about, and attachment to job.
Strong technical aptitude / manual dexterity	The understanding of modern technology, its working and advances.
Machinery knowledge & skill	The knowledge of operating and handling the machine.
Product knowledge	The knowledge of the product used in construction.
Material approach knowledge	The knowledge of material selection for the construction.
Safety and security	The knowledge of the safety and security of the construction sites.
Housekeeping Knowledge	The ability to perform housekeeping.
Competent in using communication tools	The ability to handle/ use/ operate the device to perform work.
English language competency	The defined level of skill in reading, writing, speaking and listening in English.
Bahasa Malaysia competency	The defined level of skill in reading, writing, speaking and listening in Bahasa Malaysia

COMPETENCY SKILL	DESCRIPTION
Leaderships skills	The strengths and abilities individuals demonstrate that help to oversee processes, guide initiatives and steer their employees toward the achievement of goals.
Administration & management skills	The qualities that help you complete tasks related to managing a business. This might involve responsibilities such as filing paperwork, meeting with internal and external stakeholders, presenting important information, developing processes, answering employee questions and more.
Diagnostic & troubleshooting skills	The knowledge and ability of understanding the processes involved and scientifically analyzing problems and opportunities, all other skills deal with people in one form or the other.
Problem solving skills	The ability to solve problems in an effective and timely manner without any impediments. It involves being able to identify and define the problem, generating alternative solutions, evaluating and selecting the best alternative, and implementing the selected solution.
Data collection and analysis	The skills that an individual requires to effectively collect and curate data for research purposes.
Planning and Forecasting abilities	The ability to think about the future or mentally anticipate the right way to carry-out a task or reach a specific goal.
Empowerment skill	The management practice of sharing information, rewards, and power with employees so that they can take initiative and make decisions to solve problems and improve service and performance.

COMPETENCY SKILL	DESCRIPTION
Training and coaching	The process that aims to improve performance and focuses on the 'here and now' rather than on the distant past or future.
Knowledge in rules, regulations, & Acts	The knowledge of regulation and act related to specialized construction activities
Knowledge in OSHA & Environment	The knowledge of environment safety that are related to specialized construction activities.

4.2.4 Emerging Skills

The emerging skills are the skills that relevant to the industrial revolution 4.0 (IR4.0) and the new skills that have future potential to increase the productivity . This section are discussing the job area that are implementing the 11 pillar of IR4.0. The following Table 4.5 shows the emerging skills as highlighted by the industry.

Table 4.5: Emerging Skills for Specialized Construction Activities

EMERGING SKILLS	JOB TITLES	REASON OF REQUIRED EMERGING SKILLS
IR 4.0 related skills: a) Additive Manufacturing; b) Autonomous Robots; c) Artificial Intelligence; d) Big Data Analytics; e) Cloud; f) Cybersecurity; g) Horizontal & Vertical Integration; h) Internet of Things; i) New Business Model;	The list of job titles related to IR4.0 can be refer at Annex 5.	a) Increase productivity, reduce cost and improve efficiency b) Minimize human error c) Fast decision making d) Increase process effectiveness

j) Simulation & Augmented Reality; and k) Supply Chain.		
------------------------------------------------------------	--	--

From the survey distributed, it is observed that almost all 11 pillars of the IR 4.0 affected the specialized construction activities. The respondent agrees that the pillar that gives the highest impact on the specialized construction activities are Autonomous Robot, followed by Cloud, Big Data Analytic, Cybersecurity and Internet of Things. The result of the questionnaires can refer the Figure 4.9.

Emerging Skills from 11 Pillars of IR4.0 for Specialized Construction Activities Industry

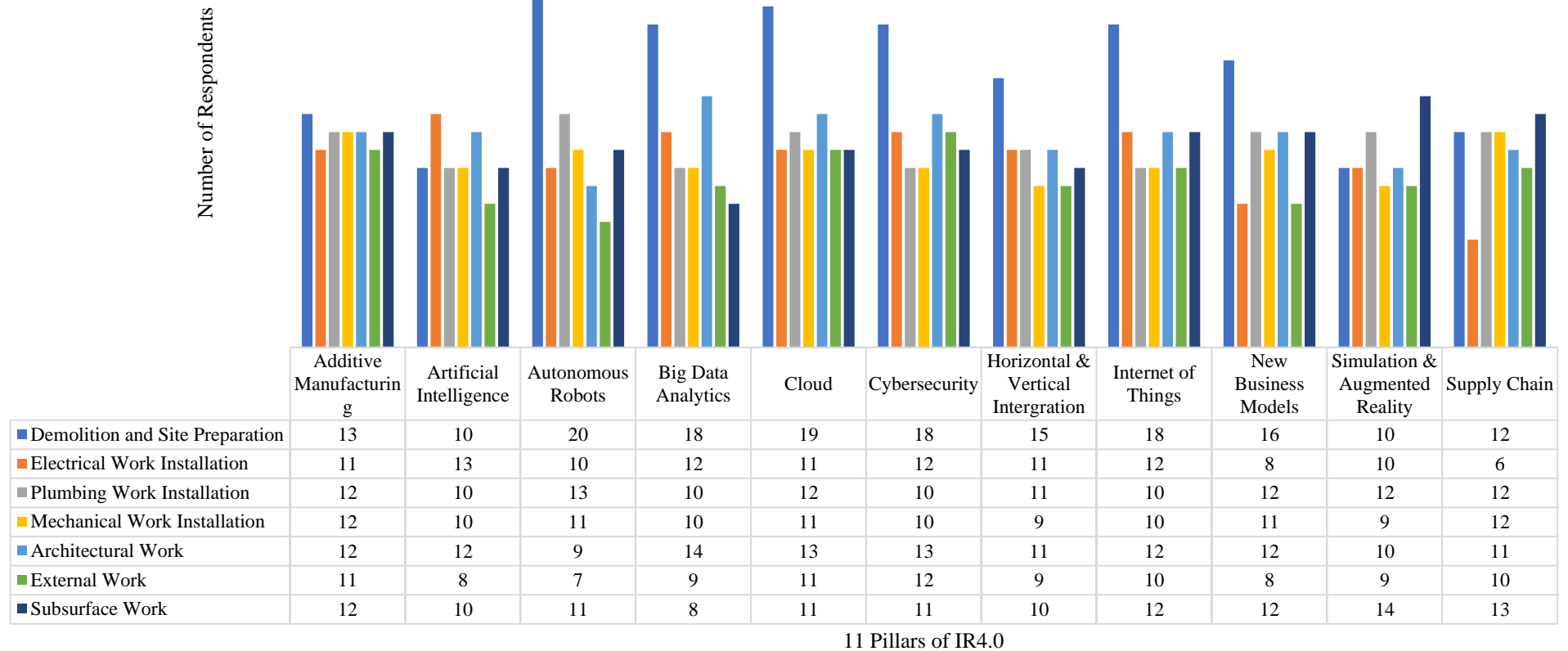


Figure 4.9: IR4.0 Related Skills for Specialized Construction Activities

4.2.5 Related Issues in Specialized Construction Activities

Related issues are discussing about the issues that are arise for the specialized construction activities industry. This issues were identified during focus group discussion and listed in Table 4.6.

Table 4.6: Related Issues in Specialized Construction Activities

NO	KEY ISSUES	DISCUSSION	SUGGESTION
1	Insufficient manpower	a) Demanding work condition b) 3D (Dirty, Dangerous, Difficult) c) Unattractive wages and fringe benefits d) Negative perception by community	i) Minimum wage policy ii) Review wages scheme on productivity based
2	High dependency on foreign labour for low skilled worker	a) 3D (Dirty, Dangerous, Difficult) b) Reliable and favourable for higher productivity than local workers c) Inability to convince young generation to participate	Both government and private sector should give concerted and continuous effort in controlling the intake of foreign labours and attract more locals
3	Underpayment of wages lead to high turn over	Salary and wages do not match with productivity and job requirements.	Create a harmonised salary scheme.
4	Low quality products- Quality Control	Low work quality	i) Quality enhancement by upgrading more skilled workers. ii) SOP enforcement by private sector
5	Economic conditions	Low investment from government and private sector	i) Enforcement from related government agencies ii) Diversification of economic activities

NO	KEY ISSUES	DISCUSSION	SUGGESTION
6	Labour costs (payment to subcontractors)	a) Too high commission percentage. b) Intense outsourcing contracts in construction activities	i) Direct contact awards ii) Improvement of procurement procedure
7	Poor percentage of youth Involvement	a) Poor technology adoption and advancement b) Negative perception	i) Enhancement of awareness and promotional activity ii) Integration of skill training and learning
8	Lack of infrastructure support	Incomplete infrastructure especially in rural areas.	Government policies and intervention together with proactive involvement of the industry players

Figure 4.10 shows the related issue regarding to specialized construction activities industry from the survey distributed. Based on the result, the most important issue regarding specialized construction activities are the insufficient manpower, followed by training specialized construction activity not available, availability of specialised equipment and machinery, and rapid technology changes.

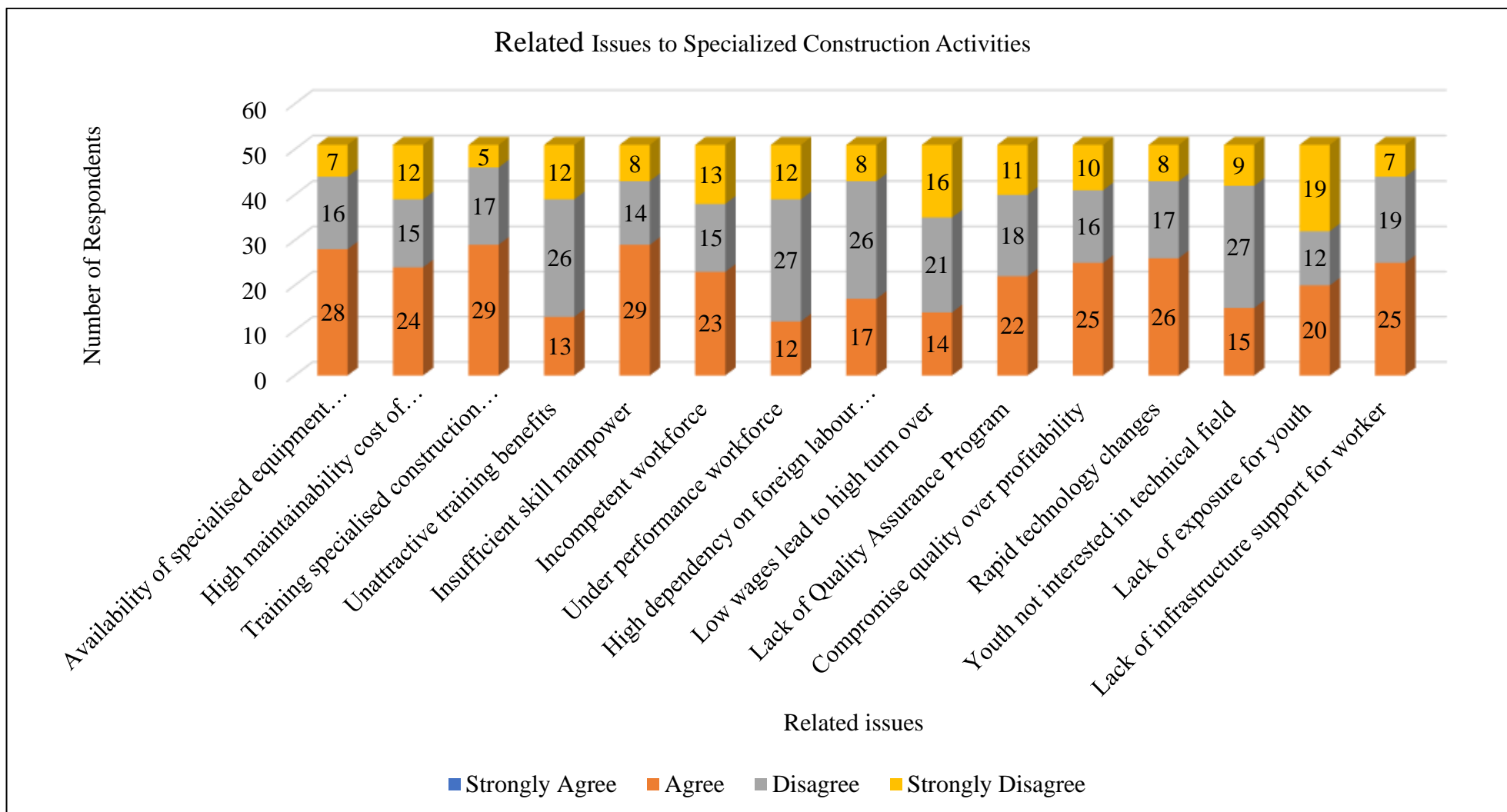


Figure 4.10: Related Issues to Specialized Construction Activities

4.3 Comparative Study Analysis

This section provides an overview regarding developed countries in specialized construction activities. Construction industry is one of the main industry that contribute to the economy in most of the country in the world. This industry has provide the jobs to millions of people. For the overview, the country selected are United Kingdom, and Sweden. The selection on the countries is due to the rapid development in specialized construction activities.

a) United Kingdom (UK)

Construction is one of the largest sectors of the UK economy. It contributes almost USD1107.30 billion to the UK economy (or 6.7%) in value added, comprises over 280,000 businesses covering some 2.93 million jobs, which is equivalent to about 10% of total UK employment. The contracting industry is the largest sub-sector of the construction sector, accounting for about 70% of total value added generated by UK construction and almost 70% of the sector's jobs. Construction products and services, although smaller in size, are also key to the sector's performance and generate substantial economic benefits. In 2011 some 16,000 UK-based firms alone, specialising in architecture and quantity surveying services, accounted for about £4.2 billion in gross value added. In the products sub-sector some 3,000 firms manufacturing metal structures and parts generated almost £4 billion in value added in the same year. Composition of the UK construction sector are as shown in Figure 4.11.

Construction also has a much wider significance to the economy. It creates, builds and maintains the workplaces in which businesses operate and flourish, the economic infrastructure which keeps the nation connected, the homes in which people live and the schools and hospitals which provide the crucial services that society needs. A modern, competitive and efficient construction industry is essential to the UK's economic prosperity. Its contribution is also vital if the UK is to meet its Climate Change Act commitments and wider environmental and societal obligations⁴¹.

⁴¹UK Construction: An economic analysis of the sector. pages 1-2

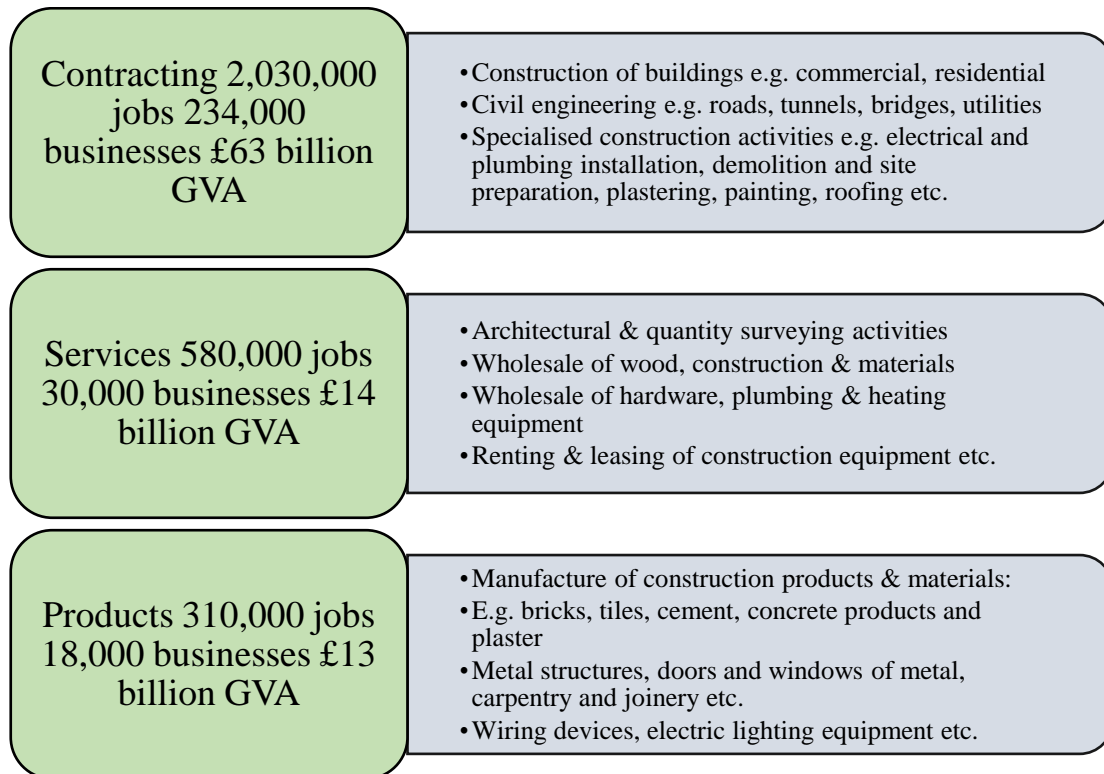


Figure 4.11: Composition of the UK Construction Sector
(Source: GVA and no. of businesses: ONS Annual Business Survey)

b) Sweden

The Swedish construction industry has an approximate annual turnover of USD 80 billion and the estimated value of the real estate stock is USD 780 billion, excluding the value of infrastructure, such as roads, bridges, railway, harbours, and airports. According to the Swedish Construction Federation, the sector employs 340,000 people and in 2018 the investments amounted to USD 55 billion, which accounts for 9 per cent of GDP.

Sweden's construction industry registered a growth of 4.4% in real terms in 2018, following an average annual growth of 4% during the preceding four years. Consequently, the industry's output value, measured at constant 2017 US dollar exchange rates, increased from US\$63.4 billion in 2017 to US\$66.2 billion in 2018; this growth can be attributed to positive developments in economic conditions,

improvement in investor confidence, and public and private sector investments in infrastructure, energy and housing construction projects.⁴²

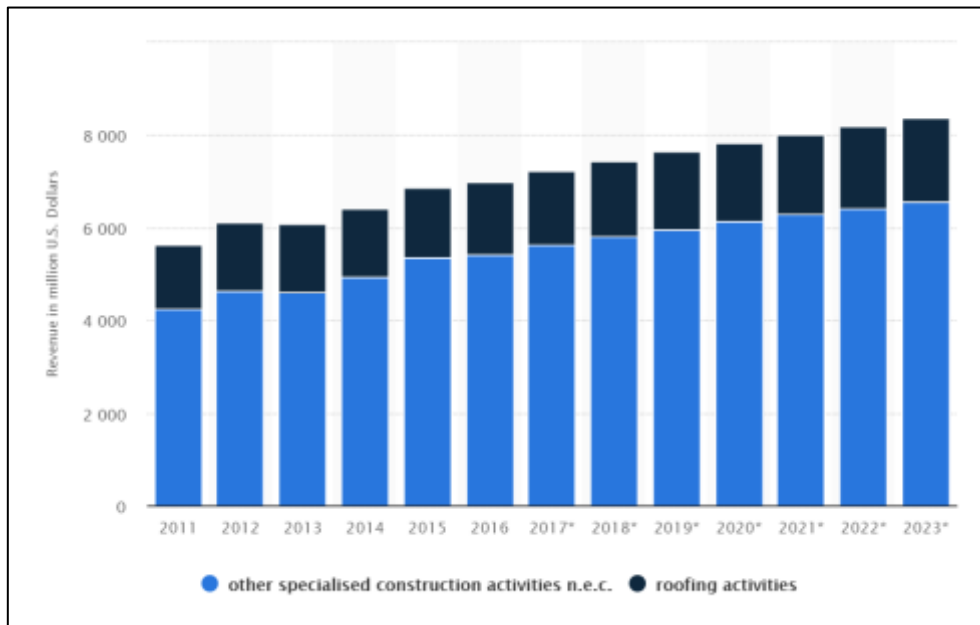


Figure 4.12: Industry Revenue of Other Specialized Construction Activities in Sweden from 2011 to 2023

(Source: <https://static1.statista.com/forecasts/906446/other-specialised-construction-activities-revenue-in-sweden>)

The industry's output is expected to contract during the early part of the forecast period (2019-2023), however, due to a decrease in domestic demand and private consumption, a weak housing sector and a decline in private sector investments in the country. Weakness in the Swedish Krona (SEK) and overall slow economic growth is also expected to hamper the industry's growth.

In real terms, the industry is expected to contract by 2.5% in 2019, 1.3% in 2020 and 0.1% in 2021. Over the remaining part of the forecast period, however, the industry is expected to recover, mainly due to the government's investment in transport infrastructure. The industry's output value in real terms is expected to post a compound

⁴² Construction in Sweden - Key Trends and Opportunities to 2023. (2019, September 8). Retrieved from <https://www.reportbuyer.com/product/4343762/construction-in-sweden-key-trends-and-opportunities-to-2023.html>

annual growth rate (CAGR) of 0.03% over the forecast period. The industry is consequently expected to rise marginally, from a value of US\$66.2 billion in 2018 to US\$66.3 billion in 2023, measured at constant 2017 US dollar exchange rates.

Residential construction was the largest market in the Swedish construction industry during the review period (2014-2018), accounting for 50.4% of its total value in 2018. The market is expected to shrink over the forecast period, to account for 45.2% of the industry's total value in 2023, due to the oversupply of residential buildings and tightened credit policies. Infrastructure construction accounted for 15.3% of the industry's total output in 2018, followed by commercial construction with 13.3%, industrial construction with 10.6%, institutional construction with 5.5% and energy and utilities construction with 4.9%.

c) Summary of comparative factors

Based on the data mentioned above, a summary of comparative factors for the construction industry between Malaysia, United Kingdom and Sweden is listed in Table 4.7 below.

Table 4.7: Comparison between Malaysia, United Kingdom and Sweden based on the Construction Industry

Country	Value of Construction Completed (USD)	Number of Establishment	Employment Statistics
Malaysia	35.73 billion	15,228	58,163 persons
United Kingdom	1,107.30 billion	11,167	2,382,000 persons
Sweden	66.2 billion	213,434	340,000 persons

4.4 Occupational Structure (OS)

The Occupational Structure (OS) is defined as the job classification, whereby similar or related occupations are group together according to specific criteria such as skills, functions, and employment based on MSIC 2008 group. The OS for information service activities comprise of job area from 2 MSIC 2008 group, which are Group 431: Demolition and site preparation, Group 432: Electrical, plumbing and other construction installation activities, Group 433: Building completion and finishing, and Group 439: Other specialized construction activities.

Based on the discussion with the expert panel from the specialized construction activities industry, a total of 71 job areas are listed out with 560 job titles related to this industry. The result listed in the Table 4.8 to Table 4.26. Besides that, the summary of the finding including with the critical job title and job title related to IR 4.0 are listed in Table 4.27.

Table 4.8: Group 431 Occupational Structure (1 of 2)

SECTION	(F) CONSTRUCTION			
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES			
GROUP	(431) DEMOLITION AND SITE PREPARATION			
AREA	Environment Preparation	Demolition (Structure)	Demolition (M&E)	Debris Disposal
LEVEL 8	Project Director	Project Director	Project Director	Not Available
LEVEL 7	Project Manager	Project Manager	Project Manager	Not Available
LEVEL 6	Construction/Site Manager	Construction/Site Manager	Construction/Site Manager	Not Available
LEVEL 5	Environment Engineer/Officer	Structure Engineer	M&E Engineer	Not Available
LEVEL 4	Assistant Environment Engineer/Officer	Assistant Structure Engineer	Assistant M&E Engineer	Assistant Structure Engineer
LEVEL 3	Site Supervisor	Site Supervisor	Site Supervisor	Site Supervisor
LEVEL 2	Handyman	Machinery Operator	Machinery Operator	Handyman
LEVEL 1	General Worker	General Worker	General Worker	General Worker

Table 4.9: Group 431 Occupational Structure (2 of 2)

SECTION	(F) CONSTRUCTION			
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES			
GROUP	(431) DEMOLITION AND SITE PREPARATION			
AREA	Site Clearing	Earth Works	Soil Treatment	Soil Testing
LEVEL 8	Not Available	Project Director	Project Director	Not Available
LEVEL 7	Not Available	Project Manager	Project Manager	Not Available
LEVEL 6	Not Available	Construction/Site Manager	Construction/Site Manager	Not Available
LEVEL 5	Not Available	Site Engineer	Site Engineer*	QA/QC Engineer
LEVEL 4	Assistant Structure Engineer	Assistant Site Engineer	Assistant Site Engineer*	Assistant QA/QC Engineer
LEVEL 3	Site Supervisor	Site Supervisor	Site Supervisor*	QA/QC Supervisor
LEVEL 2	Handyman	Machinery Operator	Technician*	Technician
LEVEL 1	General Worker	General Worker	General Worker*	General Worker

Note: *Critical Job Titles

Table 4.10: Group 432 Occupational Structure (1 of 9)

SECTION	(F) CONSTRUCTION			
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES			
GROUP	(432) ELECTRICAL, PLUMBING AND OTHER CONSTRUCTION INSTALLATION ACTIVITIES			
AREA	Electrical Works (Electrical Wiring and Fittings)	Electrical Works (Electrical Equipment Installation)	Electrical Works (Lighting Systems)	Electrical Works (Building Lightning Protection System)
LEVEL 8	Project Director	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager	Project Manager
LEVEL 6	M&E Manager	M&E Manager	M&E Manager	M&E Manager
LEVEL 5	Electrical Engineer	Electrical Engineer	Electrical Engineer	Electrical Engineer
LEVEL 4	Assistant Electrical Engineer	Assistant Electrical Engineer	Assistant Electrical Engineer	Assistant Electrical Engineer
LEVEL 3	Electrical Supervisor	Chargeman	Electrical Supervisor	Electrical Supervisor
LEVEL 2	Technician	Technician	Technician	Technician
LEVEL 1	Wireman	Wireman	Wireman	Wireman

Table 4.11: Group 432 Occupational Structure (2 of 9)

SECTION	(F) CONSTRUCTION			
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES			
GROUP	(432) ELECTRICAL, PLUMBING AND OTHER CONSTRUCTION INSTALLATION ACTIVITIES			
AREA	Electrical Works (Solar Power Supply)	Electrical Works (Building Security Systems)	Electrical Works (Building Automated & Telemetry System)	Electrical Works (High Tension (HT) Cabling Works)
LEVEL 8	Project Director	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager	Project Manager
LEVEL 6	M&E Manager	M&E Manager	M&E Manager	M&E Manager
LEVEL 5	Electrical Engineer*	Electrical Engineer***	Electrical Engineer***	Electrical Engineer
LEVEL 4	Assistant Electrical Engineer*	Assistant Electrical Engineer***	Assistant Electrical Engineer***	Assistant Electrical Engineer
LEVEL 3	Electrical Supervisor*	Electrical Supervisor***	Electrical Supervisor***	Electrical Supervisor
LEVEL 2	Technician*	Technician***	Technician***	Technician
LEVEL 1	Wireman*	Wireman*	Wireman*	Wireman

Note: *Critical Job Titles

*** Critical Job Titles and Jobs relevant to IR 4.0

Table 4.12: Group 432 Occupational Structure (3 of 9)

SECTION	(F) CONSTRUCTION		
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES		
GROUP	(432) ELECTRICAL, PLUMBING AND OTHER CONSTRUCTION INSTALLATION ACTIVITIES		
AREA	Electrical Works (Telecommunications Works)	Electrical Works (Radio Frequency Protection (RFP) System)	Electrical Works (Maintenance)
LEVEL 8	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager
LEVEL 6	M&E Manager	M&E Manager	M&E Manager
LEVEL 5	Electrical Engineer	Electrical Engineer**	Electrical Engineer
LEVEL 4	Assistant Electrical Engineer	Assistant Electrical Engineer**	Assistant Electrical Engineer
LEVEL 3	Electrical Supervisor	Electrical Supervisor**	Electrical Supervisor
LEVEL 2	Technician	Technician**	Technician
LEVEL 1	Wireman	Wireman	Wireman

Note: **Jobs relevant to IR 4.0

Table 4.13: Group 432 Occupational Structure (4 of 9)

SECTION	(F) CONSTRUCTION			
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES			
GROUP	(432) ELECTRICAL, PLUMBING AND OTHER CONSTRUCTION INSTALLATION ACTIVITIES			
AREA	Plumbing Works (Cold Water System)	Plumbing Works (Hot Water System)	Plumbing Works (Sanitary System)	Plumbing Works (Water Tank Installation)
LEVEL 8	Project Director	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager	Project Manager
LEVEL 6	M&E Manager	M&E Manager	M&E Manager	M&E Manager
LEVEL 5	Mechanical Engineer	Mechanical Engineer	Mechanical Engineer	Mechanical Engineer
LEVEL 4	Assistant Mechanical Engineer	Assistant Mechanical Engineer	Assistant Mechanical Engineer	Assistant Mechanical Engineer
LEVEL 3	Mechanical Supervisor	Mechanical Supervisor	Mechanical Supervisor	Mechanical Supervisor
LEVEL 2	Technician	Technician	Technician	Technician
LEVEL 1	Pipe Fitter	Pipe Fitter	Pipe Fitter	Pipe Fitter

Table 4.14: Group 432 Occupational Structure (5 of 9)

SECTION	(F) CONSTRUCTION		
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES		
GROUP	(432) ELECTRICAL, PLUMBING AND OTHER CONSTRUCTION INSTALLATION ACTIVITIES		
AREA	Plumbing Works (Storm Water System)	Plumbing Works (Solar Heating System)	Plumbing Works (Maintenance)
LEVEL 8	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager
LEVEL 6	M&E Manager	M&E Manager	M&E Manager
LEVEL 5	Mechanical Engineer	Mechanical Engineer*	Mechanical Engineer
LEVEL 4	Assistant Mechanical Engineer	Assistant Mechanical Engineer*	Assistant Mechanical Engineer
LEVEL 3	Mechanical Supervisor	Mechanical Supervisor*	Mechanical Supervisor
LEVEL 2	Technician	Technician*	Technician
LEVEL 1	Pipe Fitter	Pipe Fitter*	Pipe Fitter

Note: *Critical Job Titles

Table 4.15: Group 432 Occupational Structure (6 of 9)

SECTION	(F) CONSTRUCTION			
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES			
GROUP	(432) ELECTRICAL, PLUMBING AND OTHER CONSTRUCTION INSTALLATION ACTIVITIES			
AREA	Mechanical Works (Air-Conditioning & Refrigeration System)	Mechanical Works (Ventilation System)	Mechanical Works (Heating System)	Mechanical Works (Fire Protection System)
LEVEL 8	Project Director	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager	Project Manager
LEVEL 6	M&E Manager	M&E Manager	M&E Manager	M&E Manager
LEVEL 5	Mechanical Engineer	Mechanical Engineer	Mechanical Engineer	Mechanical Engineer
LEVEL 4	Assistant Mechanical Engineer	Assistant Mechanical Engineer	Assistant Mechanical Engineer	Assistant Mechanical Engineer
LEVEL 3	Mechanical Supervisor*	Mechanical Supervisor*	Mechanical Supervisor*	Mechanical Supervisor*
LEVEL 2	Technician	Technician	Technician	Technician
LEVEL 1	Mechanical Fitter	Mechanical Fitter	Mechanical Fitter	Mechanical Fitter

Note: *Critical Job Titles

Table 4.16: Group 432 Occupational Structure (7 of 9)

SECTION	(F) CONSTRUCTION			
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES			
GROUP	(432) ELECTRICAL, PLUMBING AND OTHER CONSTRUCTION INSTALLATION ACTIVITIES			
AREA	Mechanical Works (Pumping System)	Mechanical Works (Gas Piping System)	Mechanical Works (Thermal Insulation)	Mechanical Works (Sound & Vibration Insulation)
LEVEL 8	Project Director	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager	Project Manager
LEVEL 6	M&E Manager	M&E Manager	M&E Manager	M&E Manager
LEVEL 5	Mechanical Engineer*	Mechanical Engineer	Mechanical Engineer	Mechanical Engineer
LEVEL 4	Assistant Mechanical Engineer*	Assistant Mechanical Engineer	Assistant Mechanical Engineer	Assistant Mechanical Engineer
LEVEL 3	Mechanical Supervisor*	Mechanical Supervisor*	Mechanical Supervisor*	Mechanical Supervisor*
LEVEL 2	Technician*	Technician	Technician	Technician
LEVEL 1	Mechanical Fitter*	Mechanical Fitter	Mechanical Fitter	Mechanical Fitter

Note: *Critical Job Titles

Table 4.17: Group 432 Occupational Structure (8 of 9)

SECTION	(F) CONSTRUCTION		
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES		
GROUP	(432) ELECTRICAL, PLUMBING AND OTHER CONSTRUCTION INSTALLATION ACTIVITIES		
AREA	Mechanical Works (Elevator System)	Mechanical Works (Escalator & Travellator System)	Mechanical Works (Automated Building Elements)
LEVEL 8	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager
LEVEL 6	M&E Manager	M&E Manager	M&E Manager
LEVEL 5	Mechanical Engineer*	Mechanical Engineer*	Mechanical Engineer**
LEVEL 4	Assistant Mechanical Engineer*	Assistant Mechanical Engineer*	Assistant Mechanical Engineer**
LEVEL 3	Mechanical Supervisor*	Mechanical Supervisor*	Mechanical Supervisor***
LEVEL 2	Technician*	Technician*	Technician**
LEVEL 1	Mechanical Fitter*	Mechanical Fitter*	Mechanical Fitter

Note: *Critical Job Titles

**Jobs relevant to IR 4.0

*** Critical Job Titles and Jobs relevant to IR 4.0

Table 4.18: Group 432 Occupational Structure (9 of 9)

SECTION	(F) CONSTRUCTION		
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES		
GROUP	(432) ELECTRICAL, PLUMBING AND OTHER CONSTRUCTION INSTALLATION ACTIVITIES		
AREA	Mechanical Works (Vacuum Cleaning System)	Mechanical Works (Building Dehumidification System)	Mechanical Works (Maintenance)
LEVEL 8	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager
LEVEL 6	M&E Manager	M&E Manager	M&E Manager
LEVEL 5	Mechanical Engineer	Mechanical Engineer	Mechanical Engineer
LEVEL 4	Assistant Mechanical Engineer	Assistant Mechanical Engineer	Assistant Mechanical Engineer
LEVEL 3	Mechanical Supervisor*	Mechanical Supervisor*	Mechanical Supervisor*
LEVEL 2	Technician	Technician	Technician
LEVEL 1	Mechanical Fitter	Mechanical Fitter	Mechanical Fitter

Note: *Critical Job Titles

Table 4.19: Group 433 Occupational Structure (1 of 3)

SECTION	(F) CONSTRUCTION			
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES			
GROUP	(433) BUILDING COMPLETION AND FINISHING			
AREA	Architectural Works (Wall Construction)	Architectural Works (Floor Construction)	Architectural Works (Ceiling Construction)	Architectural Works (Staircase Construction)
LEVEL 8	Project Director	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager	Project Manager
LEVEL 6	Construction Manager	Construction Manager	Construction Manager	Construction Manager
LEVEL 5	Architect	Architect	Architect	Architect
LEVEL 4	Assistant Architect	Assistant Architect	Assistant Architect	Assistant Architect
LEVEL 3	Supervisor	Supervisor	Supervisor	Supervisor
LEVEL 2	Installer	Installer	Installer	Installer
LEVEL 1	General Worker	General Worker	General Worker	General Worker

Table 4.20: Group 433 Occupational Structure (2 of 3)

SECTION	(F) CONSTRUCTION			
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES			
GROUP	(433) BUILDING COMPLETION AND FINISHING			
AREA	Architectural Works (Window Installation)	Architectural Works (Door Installation)	Architectural Works (Furniture Installation)	Architectural Works (Damp & Water Proofing)
LEVEL 8	Project Director	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager	Project Manager
LEVEL 6	Construction Manager	Construction Manager	Construction Manager	Construction Manager
LEVEL 5	Architect	Architect	Architect	Architect*
LEVEL 4	Assistant Architect	Assistant Architect	Assistant Architect	Assistant Architect*
LEVEL 3	Supervisor	Supervisor	Supervisor	Supervisor*
LEVEL 2	Installer	Installer	Carpenter	Installer*
LEVEL 1	General Worker	General Worker	General Worker	General Worker*

Note: *Critical Job Titles

Table 4.21: Group 433 Occupational Structure (3 of 3)

SECTION	(F) CONSTRUCTION		
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES		
GROUP	(433) BUILDING COMPLETION AND FINISHING		
AREA	Architectural Works (Painting Works)	Architectural Works (Plastering Works)	Architectural Works (Anti-Termite)
LEVEL 8	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager
LEVEL 6	Construction Manager	Construction Manager	Construction Manager
LEVEL 5	Architect	Architect	Architect
LEVEL 4	Assistant Architect	Assistant Architect	Assistant Architect
LEVEL 3	Supervisor	Supervisor	Supervisor
LEVEL 2	Painter	Plasterer	Applicator
LEVEL 1	General Worker	General Worker	General Worker

Table 4.22: Group 439 Occupational Structure (1 of 5)

SECTION	(F) CONSTRUCTION			
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES			
GROUP	(439) OTHER SPECIALIZED CONSTRUCTION ACTIVITIES			
AREA	Specialized Machineries	Piling Work	Pile Testing	Steel/Aluminium Formwork
LEVEL 8	Project Director	Project Director	Not Available	Project Director
LEVEL 7	Project Manager	Project Manager	Not Available	Project Manager
LEVEL 6	M&E Manager	Construction/Site Manager	Not Available	Construction/Site Manager
LEVEL 5	Mechanical Engineer	Site Engineer	QA/QC Engineer	Site Engineer
LEVEL 4	Assistant Mechanical Engineer	Assistant Site Engineer	Assistant QA/QC Engineer	Assistant Site Engineer
LEVEL 3	Mechanical Supervisor	Site Supervisor	QA/QC Supervisor	Site Supervisor
LEVEL 2	Machinery Operator	Machinery Operator	Technician	Formwork Installer
LEVEL 1	General Worker	General Worker	General Worker	General Worker

Table 4.23: Group 439 Occupational Structure (2 of 5)

SECTION	(F) CONSTRUCTION			
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES			
GROUP	(439) OTHER SPECIALIZED CONSTRUCTION ACTIVITIES			
AREA	Scaffolding	Steam Cleaning	Sand Blasting	Chimneys and Industrial Oven
LEVEL 8	Project Director	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager	Project Manager
LEVEL 6	M&E Manager	M&E Manager	Construction/Site Manager	M&E Manager
LEVEL 5	Mechanical Engineer*	Mechanical Engineer	Site Engineer	Mechanical Engineer
LEVEL 4	Assistant Mechanical Engineer*	Assistant Mechanical Engineer	Assistant Site Engineer	Assistant Mechanical Engineer
LEVEL 3	Mechanical Supervisor*	Mechanical Supervisor	Site Supervisor	Mechanical Supervisor
LEVEL 2	Technician*	Technician	Technician	Installer
LEVEL 1	Mechanical Fitter*	Mechanical Fitter	General Worker	General Worker

Note: *Critical Job Titles

Table 4.24: Group 439 Occupational Structure (3 of 5)

SECTION	(F) CONSTRUCTION		
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES		
GROUP	(439) OTHER SPECIALIZED CONSTRUCTION ACTIVITIES		
AREA	Non-Electrical Solar Energy Collector	Swimming Pool Construction	Roof Construction
LEVEL 8	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager
LEVEL 6	M&E Manager	Construction/Site Manager	Construction/Site Manager
LEVEL 5	Electrical Engineer	Site Engineer	Site Engineer
LEVEL 4	Assistant Electrical Engineer	Assistant Site Engineer	Assistant Site Engineer
LEVEL 3	Electrical Supervisor	Site Supervisor	Site Supervisor
LEVEL 2	Technician	Installer	Roof Installer
LEVEL 1	Wireman	General Worker	General Worker

Table 4.25: Group 439 Occupational Structure (4 of 5)

SECTION	(F) CONSTRUCTION				
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES				
GROUP	(439) OTHER SPECIALIZED CONSTRUCTION ACTIVITIES				
AREA	External Works (Sub-Soil Drainage)	External Works (Soak Away Pit)	External Works (Retention Pond)	External Works (Turfing & Landscaping)	External Works (Building Information Modelling (BIM))
LEVEL 8	Project Director	Project Director	Project Director	Project Director	Not Available
LEVEL 7	Project Manager	Project Manager	Project Manager	Project Manager	Not Available
LEVEL 6	Construction/Site Manager	Construction/Site Manager	Construction/Site Manager	Construction/Site Manager	BIM Manager**
LEVEL 5	Site Engineer	Site Engineer	Site Engineer	Site Engineer	BIM Engineer**
LEVEL 4	Assistant Site Engineer	Assistant Site Engineer	Assistant Site Engineer	Assistant Site Engineer	BIM Modeller***
LEVEL 3	Site Supervisor	Site Supervisor	Site Supervisor	Site Supervisor	No Level
LEVEL 2	Installer	Concretor	Technician	Technician	No Level
LEVEL 1	General Worker	General Worker	General Worker	General Worker	No Level

Note: **Jobs relevant to IR 4.0

***Critical Job Titles and Jobs relevant to IR 4.0

Table 4.26: Group 439 Occupational Structure (5 of 5)

SECTION	(F) CONSTRUCTION			
DIVISION	(43) SPECIALIZED CONSTRUCTION ACTIVITIES			
GROUP	(439) OTHER SPECIALIZED CONSTRUCTION ACTIVITIES			
AREA	Subsurface Works (Utilities Mapping)	Subsurface Works (Horizontal Direct Drilling (HDD))	Subsurface Works (Vertical Shaft Sinking)	Subsurface Works (Tunnel Boring)
LEVEL 8	Project Director	Project Director	Project Director	Project Director
LEVEL 7	Project Manager	Project Manager	Project Manager	Project Manager
LEVEL 6	Construction/Site Manager	Construction/Site Manager	Construction/Site Manager	Construction/Site Manager
LEVEL 5	Site Engineer	Site Engineer*	Site Engineer	Site Engineer
LEVEL 4	Assistant Site Engineer	Assistant Site Engineer*	Assistant Site Engineer	Assistant Site Engineer
LEVEL 3	Site Supervisor	Site Supervisor*	Site Supervisor	Site Supervisor
LEVEL 2	Technician	Machine Operator*	Machine Operator	Machine Operator
LEVEL 1	No Level	General Worker*	General Worker	General Worker

Note: *Critical Job Titles

Table 4.27: Summary of Job Titles

No	Job Area	Level								Total Identified Job Titles	Total Critical Job	Total Job Related to IR4.0
		1	2	3	4	5	6	7	8			
Group 431 – Demolition and Site Preparation												
1	Environment Preparation	1	1	1	1	1	1	1	1	8	NA	NA
2	Demolition (Structure)	1	1	1	1	1	1	1	1	8	NA	NA
3	Demolition (M&E)	1	1	1	1	1	1	1	1	8	NA	NA
4	Debris Disposal	1	1	1	1	NA	NA	NA	NA	4	NA	NA
5	Site Clearing	1	1	1	1	NA	NA	NA	NA	4	NA	NA
6	Earth Works	1	1	1	1	1	1	1	1	8	NA	NA
7	Soil Treatment	1	1	1	1	1	1	1	1	8	5	NA
8	Soil Testing	1	1	1	1	1	NA	NA	NA	5	NA	NA
Group 432 – Electrical, Plumbing and Other Construction Installation Activities												
1	Electrical Works (Electrical Wiring and Fittings)	1	1	1	1	1	1	1	1	8	NA	NA
2	Electrical Works (Electrical Equipment Installation)	1	1	1	1	1	1	1	1	8	NA	NA
3	Electrical Works (Lighting Systems)	1	1	1	1	1	1	1	1	8	NA	NA
4	Electrical Works (Building Lightning Protection System)	1	1	1	1	1	1	1	1	8	NA	NA

No	Job Area	Level								Total Identified Job Titles	Total Critical Job	Total Job Related to IR4.0
		1	2	3	4	5	6	7	8			
5	Electrical Works (Solar Power Supply)	1	1	1	1	1	1	1	1	8	5	NA
6	Electrical Works (Building Security Systems)	1	1	1	1	1	1	1	1	8	5	4
7	Electrical Works (Building Automated & Telemetry System)	1	1	1	1	1	1	1	1	8	5	4
8	Electrical Works (High Tension (HT) Cabling Works)	1	1	1	1	1	1	1	1	8	NA	NA
9	Electrical Works (Telecommunications Works)	1	1	1	1	1	1	1	1	8	NA	NA
10	Electrical Works (Radio Frequency Protection (RFP) System)	1	1	1	1	1	1	1	1	8	NA	4
11	Electrical Works (Maintenance)	1	1	1	1	1	1	1	1	8	NA	NA
12	Plumbing Works (Cold Water System)	1	1	1	1	1	1	1	1	8	NA	NA
13	Plumbing Works (Hot Water System)	1	1	1	1	1	1	1	1	8	NA	NA
14	Plumbing Works (Sanitary System)	1	1	1	1	1	1	1	1	8	NA	NA
15	Plumbing Works (Water Tank Installation)	1	1	1	1	1	1	1	1	8	NA	NA
16	Plumbing Works (Storm Water System)	1	1	1	1	1	1	1	1	8	NA	NA
17	Plumbing Works (Solar Heating System)	1	1	1	1	1	1	1	1	8	5	NA
18	Plumbing Works (Maintenance)	1	1	1	1	1	1	1	1	8	NA	NA

No	Job Area	Level								Total Identified Job Titles	Total Critical Job	Total Job Related to IR4.0
		1	2	3	4	5	6	7	8			
19	Mechanical Works (Air-Conditioning & Refrigeration System)	1	1	1	1	1	1	1	1	8	1	NA
20	Mechanical Works (Ventilation System)	1	1	1	1	1	1	1	1	8	1	NA
21	Mechanical Works (Heating System)	1	1	1	1	1	1	1	1	8	1	NA
22	Mechanical Works (Fire Protection System)	1	1	1	1	1	1	1	1	8	1	NA
23	Mechanical Works (Pumping System)	1	1	1	1	1	1	1	1	8	5	NA
24	Mechanical Works (Gas Piping System)	1	1	1	1	1	1	1	1	8	1	NA
25	Mechanical Works (Thermal Insulation)	1	1	1	1	1	1	1	1	8	1	NA
26	Mechanical Works (Sound & Vibration Insulation)	1	1	1	1	1	1	1	1	8	1	NA
27	Mechanical Works (Elevator System)	1	1	1	1	1	1	1	1	8	5	NA
28	Mechanical Works (Escalator & Travellator System)	1	1	1	1	1	1	1	1	8	5	NA

No	Job Area	Level								Total Identified Job Titles	Total Critical Job	Total Job Related to IR4.0
		1	2	3	4	5	6	7	8			
29	Mechanical Works (Automated Building Elements)	1	1	1	1	1	1	1	1	8	1	4
30	Mechanical Works (Vacuum Cleaning System)	1	1	1	1	1	1	1	1	8	1	NA
31	Mechanical Works (Building Dehumidification System)	1	1	1	1	1	1	1	1	8	1	NA
32	Mechanical Works (Maintenance)	1	1	1	1	1	1	1	1	8	1	NA
Group 433 – Building Completion And Finishing												
1	Architectural Works (Wall Construction)	1	1	1	1	1	1	1	1	8	NA	NA
2	Architectural Works (Floor Construction)	1	1	1	1	1	1	1	1	8	NA	NA
3	Architectural Works (Ceiling Construction)	1	1	1	1	1	1	1	1	8	NA	NA
4	Architectural Works (Staircase Construction)	1	1	1	1	1	1	1	1	8	NA	NA
5	Architectural Works (Window Installation)	1	1	1	1	1	1	1	1	8	NA	NA
6	Architectural Works (Door Installation)	1	1	1	1	1	1	1	1	8	NA	NA
7	Architectural Works (Furniture Installation)	1	1	1	1	1	1	1	1	8	NA	NA
8	Architectural Works (Damp & Water Proofing)	1	1	1	1	1	1	1	1	8	5	NA
9	Architectural Works (Painting Works)	1	1	1	1	1	1	1	1	8	NA	NA
10	Architectural Works (Plastering Works)	1	1	1	1	1	1	1	1	8	NA	NA

No	Job Area	Level								Total Identified Job Titles	Total Critical Job	Total Job Related to IR4.0
		1	2	3	4	5	6	7	8			
11	Architectural Works (Anti-Termite)	1	1	1	1	1	1	1	1	8	NA	NA
Group 439 – Other Specialized Construction Activities												
1	Specialized Machineries	1	1	1	1	1	1	1	1	8	NA	NA
2	Piling Work	1	1	1	1	1	1	1	1	8	NA	NA
3	Pile Testing	1	1	1	1	1	1	1	1	8	NA	NA
4	Steel/Aluminium Formwork	1	1	1	1	1	1	1	1	8	NA	NA
5	Scaffolding	1	1	1	1	1	1	1	1	8	5	NA
6	Steam Cleaning	1	1	1	1	1	1	1	1	8	NA	NA
7	Sand Blasting	1	1	1	1	1	1	1	1	8	NA	NA
8	Chimneys and Industrial Oven	1	1	1	1	1	1	1	1	8	NA	NA
9	Non-Electrical Solar Energy Collector	1	1	1	1	1	1	1	1	8	NA	NA
10	Swimming Pool Construction	1	1	1	1	1	1	1	1	8	NA	NA
11	Roof Construction	1	1	1	1	1	1	1	1	8	NA	NA
12	External Works (Sub-Soil Drainage)	1	1	1	1	1	1	1	1	8	NA	NA
13	External Works (Soak Away Pit)	1	1	1	1	1	1	1	1	8	NA	NA
14	External Works (Retention Pond)	1	1	1	1	1	1	1	1	8	NA	NA
15	External Works (Turfing & Landscaping)	1	1	1	1	1	1	1	1	8	NA	NA

No	Job Area	Level								Total Identified Job Titles	Total Critical Job	Total Job Related to IR4.0
		1	2	3	4	5	6	7	8			
16	External Works (Building Information Modelling (BIM))	NL	NL	NL	1	1	1	NA	NA	3	1	3
17	Subsurface Works (Utilities Mapping)	1	1	1	1	1	1	1	1	8	NA	NA
18	Subsurface Works (Horizontal Direct Drilling (HDD))	1	1	1	1	1	1	1	1	8	5	NA
19	Subsurface Works (Vertical Shaft Sinking)	1	1	1	1	1	1	1	1	8	NA	NA
20	Subsurface Works (Tunnel Boring)	1	1	1	1	1	1	1	1	8	NA	NA
Overall Total of Identified Job Titles										560	67	19

Note: NL – No Level

NA – Not Available

4.5 Occupational Responsibilities

From the occupational structure produce, each and every job titles responsibility which may include but not limited to the list were discussed with the expert from specialized construction activities industry during the focus group discussion. This occupational responsibilities are purposely for the NOSS development. The information discussed are listed in the Table 4.28 to Table 4.53.

Division : 43 – Specialized Construction Activities

Group : 431 – Demolition and Site Preparation

Table 4.28: List of Occupational Responsibilities for Group 431 based on Table 4.8 (1 of 3)

AREA	Environment Preparation	Demolition (Structure)	Demolition (M&E)
LEVEL 8	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness.

AREA	Environment Preparation	Demolition (Structure)	Demolition (M&E)
	5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.	5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.	5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<u>Project Manager</u> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to	<u>Project Manager</u> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to	<u>Project Manager</u> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to

AREA	Environment Preparation	Demolition (Structure)	Demolition (M&E)
	<p>ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liase and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11) Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12) Perform risk management activities to minimize project risk.</p>	<p>ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liase and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11) Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12) Perform risk management activities to minimize project risk.</p>	<p>ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liase and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11) Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12) Perform risk management activities to minimize project risk.</p>

AREA	Environment Preparation	Demolition (Structure)	Demolition (M&E)
LEVEL 6	<u>Construction/Site Manager</u> <ol style="list-style-type: none"> 1) Manage project cost to stay within project limits. 2) Develop scope of work and project function. 3) Provide overall project status report to project team management and client. 4) Update project progress or status to top management. 5) Prepare project documentation such as diagram, masterplan, overall work programme. 6) Review design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Prepare request for information (RFI) to clarify uncertainties. 8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation. 	<u>Construction/Site Manager</u> <ol style="list-style-type: none"> 1) Manage project cost to stay within project limits. 2) Develop scope of work and project function. 3) Provide overall project status report to project team management and client. 4) Update project progress or status to top management. 5) Prepare project documentation such as diagram, masterplan, overall work programme. 6) Review design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Prepare request for information (RFI) to clarify uncertainties. 8) Supervise works of sub-contractor to ensure quality and conformance to 	<u>Construction/Site Manager</u> <ol style="list-style-type: none"> 1) Manage project cost to stay within project limits. 2) Develop scope of work and project function. 3) Provide overall project status report to project team management and client. 4) Update project progress or status to top management. 5) Prepare project documentation such as diagram, masterplan, overall work programme. 6) Review design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Prepare request for information (RFI) to clarify uncertainties. 8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation.

AREA	Environment Preparation	Demolition (Structure)	Demolition (M&E)
	9) Communicate with consultant for project progress and matters arising. 10) Coordinate with safety, health and environmental officer to ensure compliance with regulation. 11) Liase with project manager to meet project objectives and scopes of work within budget allocated. 12) Execute risk management activities to minimize project risk. 13) Delegate and assign task to subordinate.	design specifications and budget allocation. 9) Communicate with consultant for project progress and matters arising. 10) Coordinate with safety, health and environmental officer to ensure compliance with regulation. 11) Liase with project manager to meet project objectives and scopes of work within budget allocated. 12) Execute risk management activities to minimize project risk. 13) Delegate and assign task to subordinate.	9) Communicate with consultant for project progress and matters arising. 10) Coordinate with safety, health and environmental officer to ensure compliance with regulation. 11) Liase with project manager to meet project objectives and scopes of work within budget allocated. 12) Execute risk management activities to minimize project risk. 13) Delegate and assign task to subordinate.
LEVEL 5	<u>Environment Engineer/Officer</u> 1) Plan, schedule, or coordinate environment preparation activities to meet deadlines. 2) Prepare project costing and request budget estimates. 3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress.	<u>Structure Engineer</u> 1) Plan, schedule, or coordinate demolition activities to meet deadlines. 2) Prepare project costing and request budget estimates. 3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress.	<u>M&E Engineer</u> 1) Plan, schedule, or coordinate demolition activities to meet deadlines. 2) Prepare project costing and request budget estimates. 3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress.

AREA	Environment Preparation	Demolition (Structure)	Demolition (M&E)
	5) Plan and organize construction maintenance activities. 6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work program/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme.	5) Plan and organize construction maintenance activities. 6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work program/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme.	5) Plan and organize construction maintenance activities. 6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work program/ project milestone.. 9) Direct and supervise construction contractor, sub-contractor or related worker 10) Develop or implement quality control and environmental protection programme. 11) Liaise with client, consultant, supplier, contractor, sub-contractor and all relevant parties for all M&E works.
LEVEL 4	<u>Assistant Environment Engineer/Officer</u> 1) Assist to plan, schedule, or coordinate environment preparation activities to meet deadlines.	<u>Assistant Structure Engineer</u> 1) Assist to plan, schedule, or coordinate demolition to meet deadlines.	<u>Assistant M&E Engineer</u> 1) Assist to plan, schedule, or coordinate demolition to meet deadlines.

AREA	Environment Preparation	Demolition (Structure)	Demolition (M&E)
	<ul style="list-style-type: none"> 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 10) Assist to develop or implement quality control and environmental protection programme. 	<ul style="list-style-type: none"> 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 10) Assist to develop or implement quality control and environmental protection programme. 	<ul style="list-style-type: none"> 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 10) Assist to develop or implement quality control and environmental protection programme. 11) Coordinate joint inspection with authorities to cut off or disconnect water

AREA	Environment Preparation	Demolition (Structure)	Demolition (M&E)
	14) Perform subordinate appraisal. 15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within the work scope. 17) Prepare reports for environment preparation activities.	13) Arrange for maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within the work scope. 17) Prepare reports for demolition activities.	13) Arrange for maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within the work scope. 17) Prepare reports for demolition activities. 18) Confirm water piping, gas piping, and electricity power cable cut off or disconnected.
LEVEL 2	<u>Handyman</u> 1) Operate tools, equipment and machinery. 2) Carry out construction works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Assist in materials loading and unloading activities. 5) Measure, mark or record measurements. 6) Perform housekeeping.	<u>Machine Operator</u> 1) Operate tools, equipment and machinery. 2) Carry out construction works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform housekeeping .	<u>Machine Operator</u> 1) Operate tools, equipment and machinery. 2) Carry out construction works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform housekeeping . 6) Adhere to safety, health and environment regulation.

AREA	Environment Preparation	Demolition (Structure)	Demolition (M&E)
	7) Adhere to safety health and environment regulation.	6) Adhere to safety, health and environment regulation.	
LEVEL 1	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Control the flow of traffic passing near, in or around work site. 8) Perform housekeeping. 9) Adhere to the safety, health and environment regulation.	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Control the flow of traffic passing near, in or around work site. 8) Perform housekeeping. 9) Adhere to the safety, health and environment regulation.	<u>General Worker</u> 1) Prepare tools, equipment and machinery 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Control the flow of traffic passing near, in or around work site. 8) Perform housekeeping.. 9) Adhere to the safety, health and environment regulation.

Table 4.29: List of Occupational Responsibilities for Group 431 based on Table 4.8 and Table 4.9 (2 of 3)

AREA	Debris Disposal	Site Clearing	Earth Works
LEVEL 8	Not Available	Not Available	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	Not Available	Not Available	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits.

AREA	Debris Disposal	Site Clearing	Earth Works
			<ul style="list-style-type: none"> 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client 5) Verify project documentation such as diagram, masterplan, overall work program. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising.

AREA	Debris Disposal	Site Clearing	Earth Works
			<p>10)Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>
LEVEL 6	Not Available	Not Available	<p><u>Construction/Site Manager</u></p> <p>1) Manage project cost to stay within project limits.</p> <p>2) Develop scope of work and project function.</p> <p>3) Provide overall project status report to project team management and client.</p> <p>4) Update project progress or status to top management.</p> <p>5) Prepare project documentation such as diagram, masterplan, overall work programme.</p>

AREA	Debris Disposal	Site Clearing	Earth Works
			6) Review design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Prepare request for information (RFI) to clarify uncertainties. 8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation. 9) Communicate with consultant for project progress and matters arising. 10) Coordinate with safety, health and environmental officer to ensure compliance with regulation. 11) Liaise with project manager to meet project objectives and scopes of work within budget allocated. 12) Execute risk management activities to minimize project risk. 13) Delegate and assign task to subordinate.
LEVEL 5	Not Available	Not Available	<u>Site Engineer</u>

AREA	Debris Disposal	Site Clearing	Earth Works
			<ol style="list-style-type: none"> 1) Plan, schedule, or coordinate earth works activities to meet deadlines. 2) Prepare project costing and request budget estimates. 3) Inspect or review project deliverables to monitor compliance with requirement 4) Monitor work progress. 5) Plan and organize construction maintenance activities. 6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work programme/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme.

AREA	Debris Disposal	Site Clearing	Earth Works
LEVEL 4	<u>Assistant Structure Engineer</u> <ol style="list-style-type: none"> 1) Assist to plan, schedule, or coordinate debris disposal activities to meet deadlines. 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 	<u>Assistant Structure Engineer</u> <ol style="list-style-type: none"> 1) Assist to plan, schedule, or coordinate site clearing activities to meet deadlines. 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 	<u>Assistant Site Engineer</u> <ol style="list-style-type: none"> 1) Assist to plan, schedule, or coordinate earth works activities to meet deadlines. 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 9) Assist to direct and supervise construction contractor, sub-contractor or related worker.

AREA	Debris Disposal	Site Clearing	Earth Works
	10) Assist to develop or implement quality control and environmental protection program.	10) Assist to develop or implement quality control and environmental protection program.	10) Assist to develop or implement quality control and environmental protection program.
LEVEL 3	<u>Site Supervisor</u> 1) Prepare daily work schedule, coordinate and supervise for debris disposal activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings.	<u>Site Supervisor</u> 1) Prepare daily work schedule, coordinate and supervise for site clearing activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings.	<u>Site Supervisor</u> 1) Prepare daily work schedule, coordinate and supervise for earth works activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings.

AREA	Debris Disposal	Site Clearing	Earth Works
	10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within work scope. 17) Prepare reports for debris disposal activities.	10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within work scope. 17) Prepare reports for site clearing activities.	10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within work scope. 17) Prepare reports for earth works activities.
LEVEL 2	<u>Handyman</u> 1) Operate tools, equipment and machinery. 2) Carry out construction works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials.	<u>Handyman</u> 1) Operate tools, equipment and machinery. 2) Carry out construction works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials.	<u>Machinery Operator</u> 1) Operate tools, equipment and machinery. 2) Carry out construction works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials.

AREA	Debris Disposal	Site Clearing	Earth Works
	5) Perform housekeeping . 6) Adhere to safety, health and environment regulation.	5) Perform housekeeping. 6) Adhere to safety, health and environment regulation.	5) Perform housekeeping. 6) Adhere to safety, health and environment regulation.
LEVEL 1	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Control the flow of traffic passing near, in or around work site. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Control the flow of traffic passing near, in or around work site. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Control the flow of traffic passing near, in or around work site. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.

Table 4.30: List of Occupational Responsibilities for Group 431 based on Table 4.9 (3 of 3)

AREA	Soil Treatment	Soil Testing
LEVEL 8	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	Not Available
LEVEL 7	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 	Not Available

AREA	Soil Treatment	Soil Testing
	<ul style="list-style-type: none"> 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liaise and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk. 	
LEVEL 6	<p><u>Construction/Site Manager</u></p> <ul style="list-style-type: none"> 1) Manage project cost to stay within project limits. 2) Develop scope of work and project function. 3) Provide overall project status report to project team management and client. 	Not Available

AREA	Soil Treatment	Soil Testing
	<ul style="list-style-type: none"> 4) Update project progress or status to top management. 5) Prepare project documentation such as diagram, masterplan, overall work programme. 6) Review design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Prepare request for information (RFI) to clarify uncertainties. 8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation. 9) Communicate with consultant for project progress and matters arising. 10) Coordinate with safety, health and environmental officer to ensure compliance with regulation. 11) Liaise with project manager to meet project objectives and scopes of work within budget allocated. 12) Execute risk management activities to minimize project risk. 13) Delegate and assign task to subordinate. 	
LEVEL 5	<p><u>Site Engineer</u></p> <ul style="list-style-type: none"> 1) Plan, schedule, or coordinate soil treatment activities to meet deadlines. 2) Prepare project costing and request budget estimates. 	<p><u>QA/QC Engineer</u></p> <ul style="list-style-type: none"> 1) Plan routine and non-routine soil testing and analysis. 2) Analyse test results and compare to establish specification and control limits. 3) Verify laboratory test data.

AREA	Soil Treatment	Soil Testing
	<ul style="list-style-type: none"> 3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress. 5) Plan and organize construction maintenance activities. 6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project . 8) Prepare master work program/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme. 	<ul style="list-style-type: none"> 4) Verify equipment calibration data. 5) Provide quality control data for regulatory submission. 6) Investigate or report irregularity on test result. 7) Identify problem and recommend solution. 8) Verify laboratory condition according to equipment manual. 9) Monitor testing procedure for all test performed according to specification, standard and test procedure. 10) Review data to ensure accuracy and adherence to regulatory compliance. 11) Liase between QC and other departments, vendor or contractor. 12) Recommend corrective action based on non-conformance report.
LEVEL 4	<p><u>Assistant Site Engineer</u></p> <ul style="list-style-type: none"> 1) Assist to plan, schedule, or coordinate soil treatment activities to meet deadlines. 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 	<p><u>Assistant QA/QC Engineer</u></p> <ul style="list-style-type: none"> 1) Coordinate sampling activities. 2) Prepare sample for routine and non-routine analysis. 3) Prepare documentation for test results according to requirement. 4) Perform all testing according to specification, standard and test procedure. 5) Assist in equipment calibration process. 6) Complete documentation to support testing procedure. 7) Liase with third party laboratory tester/operator.

AREA	Soil Treatment	Soil Testing
	<ul style="list-style-type: none"> 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 10) Assist to develop or implement quality control and environmental protection programme. 	<ul style="list-style-type: none"> 8) Compile laboratory test data for report preparation. 9) Review data to ensure accuracy and adherence to regulatory compliance. 10) Propose for the next course of action. 11) Raise non-conformance based on test results reviewed.
LEVEL 3	<p><u>Site Supervisor</u></p> <ul style="list-style-type: none"> 1) Prepare daily work schedule, coordinate and supervise for soil treatment activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 	<p><u>QA/QC Supervisor</u></p> <ul style="list-style-type: none"> 1) Prepare daily work schedule, coordinate and supervise for soil testing works. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret soil testing document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings.

AREA	Soil Treatment	Soil Testing
	10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within work scope. 17) Prepare reports for soil treatment activities.	10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within work scope. 17) Prepare reports for soil testing works.
LEVEL 2	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out soil treatment works according to procedure and specification. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform housekeeping. 6) Adhere to safety, health and environment regulation.	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out soil testing works according to procedure and specification. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform housekeeping. 6) Adhere to safety, health and environment regulation.
LEVEL 1	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials.	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials.

AREA	Soil Treatment	Soil Testing
	3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Control the flow of traffic passing near, in or around work site. 8) Perform housekeeping. 9) Adhere to safety health and environment regulation.	3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Control the flow of traffic passing near, in or around work site. 8) Perform housekeeping. 9) Adhere to safety health and environment regulation.

Division : 43 – Specialized Construction Activities

Group : 432 – Electrical, Plumbing and Other Construction Installation Activities

Table 4.31: List of Occupational Responsibilities for Group 432 based on Table 4.10 (1 of 12)

AREA	Electrical Works (Electrical Wiring and Fittings)	Electrical Works (Electrical Equipment Installation)	Electrical Works (Lighting Systems)
LEVEL 8	<u>Project Director</u> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness.	<u>Project Director</u> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness.	<u>Project Director</u> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness.

AREA	Electrical Works (Electrical Wiring and Fittings)	Electrical Works (Electrical Equipment Installation)	Electrical Works (Lighting Systems)
	5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.	5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.	5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<u>Project Manager</u> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme.	<u>Project Manager</u> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme.	<u>Project Manager</u> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme.

AREA	Electrical Works (Electrical Wiring and Fittings)	Electrical Works (Electrical Equipment Installation)	Electrical Works (Lighting Systems)
	<p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liase and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate program or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11) Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12) Perform risk management activities to minimize project risk.</p>	<p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liase and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate program or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation</p> <p>11) Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12) Perform risk management activities to minimize project risk.</p>	<p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liase and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate program or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11) Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12) Perform risk management activities to minimize project risk.</p>

AREA	Electrical Works (Electrical Wiring and Fittings)	Electrical Works (Electrical Equipment Installation)	Electrical Works (Lighting Systems)
LEVEL 6	<p><u>M&E Manager</u></p> <ol style="list-style-type: none"> 1) Attend and coordinate all M&E matter with various consultant and relevant authorities. 2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied. 3) Implement M&E best practice project. 4) Lead standardisation of M&E design across various asset classes. 5) Implement cost management to ensure M&E design is efficient and meets project requirement. 6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works. 	<p><u>M&E Manager</u></p> <ol style="list-style-type: none"> 1) Attend and coordinate all M&E matter with various consultant and relevant authorities. 2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied. 3) Implement M&E best practice project. 4) Lead standardisation of M&E design across various asset classes. 5) Implement cost management to ensure M&E design is efficient and meets project requirement. 6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works. 	<p><u>M&E Manager</u></p> <ol style="list-style-type: none"> 1) Attend and coordinate all M&E matter with various consultant and relevant authorities. 2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied. 3) Implement M&E best practice project. 4) Lead standardisation of M&E design across various asset classes. 5) Implement cost management to ensure M&E design is efficient and meets project requirement. 6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.

AREA	Electrical Works (Electrical Wiring and Fittings)	Electrical Works (Electrical Equipment Installation)	Electrical Works (Lighting Systems)
LEVEL 5	<p><u>Electrical Engineer</u></p> <ol style="list-style-type: none"> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 	<p><u>Electrical Engineer</u></p> <ol style="list-style-type: none"> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 	<p><u>Electrical Engineer</u></p> <ol style="list-style-type: none"> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.

AREA	Electrical Works (Electrical Wiring and Fittings)	Electrical Works (Electrical Equipment Installation)	Electrical Works (Lighting Systems)
	<p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure</p>	<p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure</p>	<p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure</p>

AREA	Electrical Works (Electrical Wiring and Fittings)	Electrical Works (Electrical Equipment Installation)	Electrical Works (Lighting Systems)
	<p>conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programmes for new equipment or major repairs.</p>	<p>conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programmes for new equipment or major repairs.</p>	<p>conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programmes for new equipment or major repairs.</p>
LEVEL 4	<p><u>Assistant Electrical Engineer</u></p> <p>1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements.</p>	<p><u>Assistant Electrical Engineer</u></p> <p>1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements.</p>	<p><u>Assistant Electrical Engineer</u></p> <p>1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements.</p>

AREA	Electrical Works (Electrical Wiring and Fittings)	Electrical Works (Electrical Equipment Installation)	Electrical Works (Lighting Systems)
	<p>2) Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products.</p> <p>3) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.</p> <p>4) Assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>5) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>6) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>7) Assist to prepare specifications for purchases of materials or equipment.</p>	<p>2) Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products.</p> <p>3) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.</p> <p>4) Assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>5) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>6) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>7) Assist to prepare specifications for purchases of materials or equipment.</p>	<p>2) Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products.</p> <p>3) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.</p> <p>4) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>5) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>6) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>7) Prepare specifications for purchases of materials or equipment.</p>

AREA	Electrical Works (Electrical Wiring and Fittings)	Electrical Works (Electrical Equipment Installation)	Electrical Works (Lighting Systems)
	<p>8) Assist to estimate labour, material, or construction costs for budget preparation purposes.</p> <p>9) Assist to supervise or train project team members, as necessary.</p> <p>10) Assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>11) Assist to investigate customer or public complaints to determine the nature and extent of problems.</p> <p>12) Assist to oversee project production efforts to assure projects are completed on time and within budget.</p> <p>13) Assist to inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>14) Assist to plan or implement research methodology or procedures to apply</p>	<p>8) Assist to estimate labour, material, or construction costs for budget preparation purposes.</p> <p>9) Assist to supervise or train project team members, as necessary.</p> <p>10) Assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>11) Assist to investigate customer or public complaints to determine the nature and extent of problems.</p> <p>12) Assist to oversee project production efforts to assure projects are completed on time and within budget.</p> <p>13) Assist to inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>14) Assist to plan or implement research methodology or procedures to apply</p>	<p>8) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>9) Supervise or train project team members, as necessary.</p> <p>10) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>11) Assist to investigate customer or public complaints to determine the nature and extent of problems.</p> <p>12) Assist to oversee project production efforts to assure projects are completed on time and within budget.</p> <p>13) Assist to inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>14) Assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p>

AREA	Electrical Works (Electrical Wiring and Fittings)	Electrical Works (Electrical Equipment Installation)	Electrical Works (Lighting Systems)
	<p>principles of electrical theory to engineering projects.</p> <p>15) Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>16) Assist to plan layout of electric power generating plants or distribution lines or stations.</p>	<p>principles of electrical theory to engineering projects.</p> <p>15) Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>16) Assist to plan layout of electric power generating plants or distribution lines or stations.</p>	<p>15) Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>16) Assist to plan layout of electric power generating plants or distribution lines or stations.</p>
LEVEL 3	<p><u>Electrical Supervisor</u></p> <p>1) Troubleshoot and rectify electrical problem within work scope.</p> <p>2) Conduct site safety and induction briefing.</p> <p>3) Assign work to employees based on job.</p> <p>4) Read and interpret construction document (masterplan, construction drawing, etc) to determine works requirement.</p> <p>5) Coordinate work activities.</p> <p>6) Monitor usage of equipment or construction sites to verify safety and specification are met.</p>	<p><u>Chargeman</u></p> <p>1) Troubleshoot and rectify electrical problem within work scope.</p> <p>2) Conduct site safety and induction briefing.</p> <p>3) Assign work to employees based on job.</p> <p>4) Read and interpret construction document (masterplan, construction drawing, etc) to determine works requirement.</p> <p>5) Coordinate work activities.</p> <p>6) Monitor usage of equipment or construction sites to verify safety and specification are met.</p>	<p><u>Electrical Supervisor</u></p> <p>1) Troubleshoot and rectify electrical problem within work scope.</p> <p>2) Conduct site safety and induction briefing.</p> <p>3) Assign work to employees based on job.</p> <p>4) Read and interpret construction document (masterplan, construction drawing, etc) to determine works requirement.</p> <p>5) Coordinate work activities.</p> <p>6) Monitor usage of equipment or construction sites to verify safety and specification are met.</p>

AREA	Electrical Works (Electrical Wiring and Fittings)	Electrical Works (Electrical Equipment Installation)	Electrical Works (Lighting Systems)
	7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for electrical wiring and fittings works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for electrical wiring and fittings. 17) Lead and manage wireman.	7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for electrical equipment installation. 17) Lead and manage wireman.	7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for lighting system. 17) Lead and manage wireman.
LEVEL 2	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule.	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule.	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule.

AREA	Electrical Works (Electrical Wiring and Fittings)	Electrical Works (Electrical Equipment Installation)	Electrical Works (Lighting Systems)
	4) Perform loading and unloading activities of materials. 5) Perform electrical system testing or continuity circuits test. 6) Record electrical data. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.	4) Perform loading and unloading activities of materials. 5) Perform electrical system testing or continuity circuits test. 6) Record electrical data. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.	4) Perform loading and unloading activities of materials. 5) Perform electrical system testing or continuity circuits test. 6) Record electrical data. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.
LEVEL 1	<u>Wireman</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.	<u>Wireman</u> 1) Prepare materials, tools, equipment and machinery. 2) Assist site works according to instruction. 3) Assist routine maintenance in accordance to routine schedule. 4) Assist in materials loading and unloading activities. 5) Assist to measure, mark or record measurements. 6) Perform housekeeping. 7) Adhere to safety, health and environment regulation.	<u>Wireman</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.

Table 4.32: List of Occupational Responsibilities for Group 432 based on Table 4.10 and Table 4.11 (2 of 12)

AREA	Electrical Works (Building Lightning Protection System)	Electrical Works (Solar Power Supply)	Electrical Works (Building Security Systems)
LEVEL 8	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function.

AREA	Electrical Works (Building Lightning Protection System)	Electrical Works (Solar Power Supply)	Electrical Works (Building Security Systems)
	<ul style="list-style-type: none"> 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liaise and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety, 	<ul style="list-style-type: none"> 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liaise and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety, 	<ul style="list-style-type: none"> 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liaise and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety,

AREA	Electrical Works (Building Lightning Protection System)	Electrical Works (Solar Power Supply)	Electrical Works (Building Security Systems)
	<p>health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>
LEVEL 6	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p> <p>6) Liase and coordinates with consultant for M&E submission and approval.</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p> <p>6) Liase and coordinates with consultant for M&E submission and approval.</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p> <p>6) Liase and coordinates with consultant for M&E submission and approval.</p>

AREA	Electrical Works (Building Lightning Protection System)	Electrical Works (Solar Power Supply)	Electrical Works (Building Security Systems)
	7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.	7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.	7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.
LEVEL 5	<u>Electrical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.	<u>Electrical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.	<u>Electrical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.

AREA	Electrical Works (Building Lightning Protection System)	Electrical Works (Solar Power Supply)	Electrical Works (Building Security Systems)
	<p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>	<p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>	<p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>

AREA	Electrical Works (Building Lightning Protection System)	Electrical Works (Solar Power Supply)	Electrical Works (Building Security Systems)
	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programs for new equipment or major repairs.</p>	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programs for new equipment or major repairs.</p>	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programs for new equipment or major repairs.</p>

AREA	Electrical Works (Building Lightning Protection System)	Electrical Works (Solar Power Supply)	Electrical Works (Building Security Systems)
LEVEL 4	<p><u>Assistant Electrical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products. 3) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 4) Assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 5) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 	<p><u>Assistant Electrical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products. 3) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 4) Assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 5) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 	<p><u>Assistant Electrical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products. 3) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 4) Assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 5) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects.

AREA	Electrical Works (Building Lightning Protection System)	Electrical Works (Solar Power Supply)	Electrical Works (Building Security Systems)
	<p>6) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>7) Assist to prepare specifications for purchases of materials or equipment.</p> <p>8) Assist to estimate labour, material, or construction costs for budget preparation purposes.</p> <p>9) Assist to supervise or train project team members, as necessary.</p> <p>10) Assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>11) Assist to investigate customer or public complaints to determine the nature and extent of problems.</p> <p>12) Assist to oversee project production efforts to assure projects are completed on time and within budget.</p> <p>13) Assist to inspect completed installations and observe operations to ensure conformance to design and equipment</p>	<p>6) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>7) Assist to prepare specifications for purchases of materials or equipment.</p> <p>8) Assist to estimate labour, material, or construction costs for budget preparation purposes.</p> <p>9) Assist to supervise or train project team members, as necessary.</p> <p>10) Assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>11) Assist to investigate customer or public complaints to determine the nature and extent of problems.</p> <p>12) Assist to oversee project production efforts to assure projects are completed on time and within budget.</p> <p>13) Assist to inspect completed installations and observe operations to ensure conformance to design and equipment</p>	<p>6) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>7) Assist to prepare specifications for purchases of materials or equipment.</p> <p>8) Assist to estimate labour, material, or construction costs for budget preparation purposes.</p> <p>9) Assist to supervise or train project team members, as necessary.</p> <p>10) Assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>11) Assist to investigate customer or public complaints to determine the nature and extent of problems.</p> <p>12) Assist to oversee project production efforts to assure projects are completed on time and within budget.</p> <p>13) Assist to inspect completed installations and observe operations to ensure conformance to design and equipment</p>

AREA	Electrical Works (Building Lightning Protection System)	Electrical Works (Solar Power Supply)	Electrical Works (Building Security Systems)
	<p>specifications and compliance with operational, safety, or environmental standards.</p> <p>14) Assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>15) Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>16) Assist to plan layout of electric power generating plants or distribution lines or stations.</p>	<p>specifications and compliance with operational, safety, or environmental standards.</p> <p>14) Assist to assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>15) Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>16) Assist to plan layout of electric power generating plants or distribution lines or stations.</p>	<p>specifications and compliance with operational, safety, or environmental standards.</p> <p>14) Assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>15) Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>16) Assist to plan layout of electric power generating plants or distribution lines or stations.</p>
LEVEL 3	<p><u>Electrical Supervisor</u></p> <p>1) Troubleshoot and rectify electrical problem within work scope.</p> <p>2) Conduct site safety and induction briefing.</p> <p>3) Assign work to employees based on job.</p> <p>4) Read and interpret construction document (masterplan, construction drawing, etc) to determine works requirement.</p>	<p><u>Electrical Supervisor</u></p> <p>1) Troubleshoot and rectify electrical problem within work scope.</p> <p>2) Conduct site safety and induction briefing.</p> <p>3) Assign work to employees based on job.</p> <p>4) Read and interpret construction document (masterplan, construction drawing, etc) to determine works requirement.</p>	<p><u>Electrical Supervisor</u></p> <p>1) Troubleshoot and rectify electrical problem within work scope.</p> <p>2) Conduct site safety and induction briefing.</p> <p>3) Assign work to employees based on job.</p> <p>4) Read and interpret construction document (masterplan, construction drawing, etc) to determine works requirement.</p>

AREA	Electrical Works (Building Lightning Protection System)	Electrical Works (Solar Power Supply)	Electrical Works (Building Security Systems)
	5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for building lightning protection system. 17) Lead and manage wireman.	5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for solar power supply. 17) Lead and manage wireman.	5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for building security system. 17) Lead and manage wireman.

AREA	Electrical Works (Building Lightning Protection System)	Electrical Works (Solar Power Supply)	Electrical Works (Building Security Systems)
LEVEL 2	<u>Technician</u> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform electrical system testing or continuity circuits test. 6) Record electrical data. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation. 	<u>Technician</u> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform electrical system testing or continuity circuits test 6) Record electrical data. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation. 	<u>Technician</u> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform electrical system testing or continuity circuits test 6) Record electrical data. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.
LEVEL 1	<u>Wireman</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 	<u>Wireman</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 	<u>Wireman</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities.

AREA	Electrical Works (Building Lightning Protection System)	Electrical Works (Solar Power Supply)	Electrical Works (Building Security Systems)
	6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.	6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.	6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.

Table 4.33: List of Occupational Responsibilities for Group 432 based on Table 4.11 and Table 4.12 (3 of 12)

AREA	Electrical Works (Building Automated & Telemetry System)	Electrical Works (High Tension (HT) Cabling Works)	Electrical Works (Telecommunications Works)
LEVEL 8	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function.

AREA	Electrical Works (Building Automated & Telemetry System)	Electrical Works (High Tension (HT) Cabling Works)	Electrical Works (Telecommunications Works)
	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>

AREA	Electrical Works (Building Automated & Telemetry System)	Electrical Works (High Tension (HT) Cabling Works)	Electrical Works (Telecommunications Works)
	<p>with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>
LEVEL 6	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p>

AREA	Electrical Works (Building Automated & Telemetry System)	Electrical Works (High Tension (HT) Cabling Works)	Electrical Works (Telecommunications Works)
	6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.	6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.	6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.
LEVEL 5	<u>Electrical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or	<u>Electrical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or	<u>Electrical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or

AREA	Electrical Works (Building Automated & Telemetry System)	Electrical Works (High Tension (HT) Cabling Works)	Electrical Works (Telecommunications Works)
	<p>systems for commercial, industrial, or domestic purposes.</p> <p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>	<p>systems for commercial, industrial, or domestic purposes.</p> <p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>	<p>systems for commercial, industrial, or domestic purposes.</p> <p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>

AREA	Electrical Works (Building Automated & Telemetry System)	Electrical Works (High Tension (HT) Cabling Works)	Electrical Works (Telecommunications Works)
	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programmes for new equipment or major repairs.</p>	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programmes for new equipment or major repairs.</p>	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programmes for new equipment or major repairs.</p>

AREA	Electrical Works (Building Automated & Telemetry System)	Electrical Works (High Tension (HT) Cabling Works)	Electrical Works (Telecommunications Works)
LEVEL 4	<p><u>Assistant Electrical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products. 3) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 4) Assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 5) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 	<p><u>Assistant Electrical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products. 3) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 4) Assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 5) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 	<p><u>Assistant Electrical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products. 3) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 4) Assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 5) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects.

AREA	Electrical Works (Building Automated & Telemetry System)	Electrical Works (High Tension (HT) Cabling Works)	Electrical Works (Telecommunications Works)
	<p>6) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>7) Assist to prepare specifications for purchases of materials or equipment.</p> <p>8) Assist to estimate labour, material, or construction costs for budget preparation purposes.</p> <p>9) Assist to supervise or train project team members, as necessary.</p> <p>10) Assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>11) Assist to investigate customer or public complaints to determine the nature and extent of problems.</p> <p>12) Assist to oversee project production efforts to assure projects are completed on time and within budget.</p> <p>13) Assist to inspect completed installations and observe operations to ensure conformance to design and equipment</p>	<p>6) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>7) Assist to prepare specifications for purchases of materials or equipment.</p> <p>8) Assist to estimate labour, material, or construction costs for budget preparation purposes.</p> <p>9) Assist to supervise or train project team members, as necessary.</p> <p>10) Assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>11) Assist to investigate customer or public complaints to determine the nature and extent of problems.</p> <p>12) Assist to oversee project production efforts to assure projects are completed on time and within budget.</p> <p>13) Assist to inspect completed installations and observe operations to ensure conformance to design and equipment</p>	<p>6) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>7) Assist to prepare specifications for purchases of materials or equipment.</p> <p>8) Assist to estimate labour, material, or construction costs for budget preparation purposes.</p> <p>9) Assist to supervise or train project team members, as necessary.</p> <p>10) Assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>11) Assist to investigate customer or public complaints to determine the nature and extent of problems.</p> <p>12) Assist to oversee project production efforts to assure projects are completed on time and within budget.</p> <p>13) Assist to inspect completed installations and observe operations to ensure conformance to design and equipment</p>

AREA	Electrical Works (Building Automated & Telemetry System)	Electrical Works (High Tension (HT) Cabling Works)	Electrical Works (Telecommunications Works)
	<p>specifications and compliance with operational, safety, or environmental standards.</p> <p>14) Assist to assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>15) Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>16) Assist to plan layout of electric power generating plants or distribution lines or stations.</p>	<p>specifications and compliance with operational, safety, or environmental standards.</p> <p>14) Assist to assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>15) Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>16) Assist to plan layout of electric power generating plants or distribution lines or stations.</p>	<p>specifications and compliance with operational, safety, or environmental standards.</p> <p>14) Assist to assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>15) Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>16) Assist to plan layout of electric power generating plants or distribution lines or stations.</p>
LEVEL 3	<p><u>Electrical Supervisor</u></p> <p>1) Troubleshoot and rectify electrical problem within work scope.</p> <p>2) Conduct site safety and induction briefing.</p> <p>3) Assign work to employees based on job.</p> <p>4) Read and interpret construction document (such as masterplan, construction</p>	<p><u>Electrical Supervisor</u></p> <p>1) Troubleshoot and rectify electrical problem within work scope.</p> <p>2) Conduct site safety and induction briefing.</p> <p>3) Assign work to employees based on job.</p> <p>4) Read and interpret construction document (such as masterplan, construction</p>	<p><u>Electrical Supervisor</u></p> <p>1) Troubleshoot and rectify electrical problem within work scope.</p> <p>2) Conduct site safety and induction briefing.</p> <p>3) Assign work to employees based on job.</p> <p>4) Read and interpret construction document (such as masterplan, construction</p>

AREA	Electrical Works (Building Automated & Telemetry System)	Electrical Works (High Tension (HT) Cabling Works)	Electrical Works (Telecommunications Works)
	<p>drawing, etc) to determine works requirement.</p> <p>5) Coordinate work activities.</p> <p>6) Monitor usage of equipment or construction sites to verify safety and specification are met.</p> <p>7) Carry out regular work inspections.</p> <p>8) Order or request materials.</p> <p>9) Attend site meetings.</p> <p>10) Compile site document or record to prepare report.</p> <p>11) Raise safety concerns and identify construction hazard and risk.</p> <p>12) Supervise subordinate work.</p> <p>13) Arrange and perform maintenance activities.</p> <p>14) Perform subordinate appraisal.</p> <p>15) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement.</p> <p>16) Prepare reports for building automated & telemetry system.</p> <p>17) Lead and manage wireman.</p>	<p>drawing, etc) to determine works requirement.</p> <p>5) Coordinate work activities.</p> <p>6) Monitor usage of equipment or construction sites to verify safety and specification are met.</p> <p>7) Carry out regular work inspections.</p> <p>8) Order or request materials.</p> <p>9) Attend site meetings.</p> <p>10) Compile site document or record to prepare report.</p> <p>11) Raise safety concerns and identify construction hazard and risk.</p> <p>12) Supervise subordinate work.</p> <p>13) Arrange and perform maintenance activities.</p> <p>14) Perform subordinate appraisal.</p> <p>15) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement.</p> <p>16) Prepare reports for HT cabling works</p> <p>17) Lead and manage wireman.</p>	<p>drawing, etc) to determine works requirement.</p> <p>5) Coordinate work activities.</p> <p>6) Monitor usage of equipment or construction sites to verify safety and specification are met.</p> <p>7) Carry out regular work inspections.</p> <p>8) Order or request materials.</p> <p>9) Attend site meetings.</p> <p>10) Compile site document or record to prepare report.</p> <p>11) Raise safety concerns and identify construction hazard and risk.</p> <p>12) Supervise subordinate work.</p> <p>13) Arrange and perform maintenance activities.</p> <p>14) Perform subordinate appraisal.</p> <p>15) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement.</p> <p>16) Prepare reports for telecommunication works.</p> <p>17) Lead and manage wireman.</p>

AREA	Electrical Works (Building Automated & Telemetry System)	Electrical Works (High Tension (HT) Cabling Works)	Electrical Works (Telecommunications Works)
LEVEL 2	<u>Technician</u> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform electrical system testing or continuity circuits test. 6) Record electrical data. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation. 	<u>Technician</u> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform electrical system testing or continuity circuits test. 6) Record electrical data. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation. 	<u>Technician</u> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform electrical system testing or continuity circuits test. 6) Record electrical data. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.
LEVEL 1	<u>Wireman</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 	<u>Wireman</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 	<u>Wireman</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities.

AREA	Electrical Works (Building Automated & Telemetry System)	Electrical Works (High Tension (HT) Cabling Works)	Electrical Works (Telecommunications Works)
	6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.	6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.	6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.

Table 4.34: List of Occupational Responsibilities for Group 432 based on Table 4.12 (4 of 12)

AREA	Electrical Works (Radio Frequency Protection (RFP) System)	Electrical Works (Maintenance)
LEVEL 8	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme.

AREA	Electrical Works (Radio Frequency Protection (RFP) System)	Electrical Works (Maintenance)
	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk. 	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk.
LEVEL 6	<p><u>M&E Manager</u></p> <ul style="list-style-type: none"> 1) Attend and coordinate all M&E matters with various consultant and relevant authorities. 2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied. 3) Implement M&E best practice project. 4) Lead standardisation of M&E design across various asset classes. 	<p><u>M&E Manager</u></p> <ul style="list-style-type: none"> 1) Attend and coordinate all M&E matters with various consultant and relevant authorities. 2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied. 3) Implement M&E best practice project. 4) Lead standardisation of M&E design across various asset classes.

AREA	Electrical Works (Radio Frequency Protection (RFP) System)	Electrical Works (Maintenance)
	<ul style="list-style-type: none"> 5) Implement cost management to ensure M&E design is efficient and meets project requirement. 6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works. 	<ul style="list-style-type: none"> 5) Implement cost management to ensure M&E design is efficient and meets project requirement. 6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.
LEVEL 5	<p><u>Electrical Engineer</u></p> <ul style="list-style-type: none"> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 	<p><u>Electrical Engineer</u></p> <ul style="list-style-type: none"> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.

AREA	Electrical Works (Radio Frequency Protection (RFP) System)	Electrical Works (Maintenance)
	<ul style="list-style-type: none"> 6) Compile data and write reports regarding existing or potential electrical engineering studies or projects. 7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 8) Prepare specifications for purchases of materials or equipment. 9) Estimate labour, material, or construction costs for budget preparation purposes. 10) Supervise or train project team members, as necessary. 11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 12) Investigate customer or public complaints to determine the nature and extent of problems. 13) Oversee project production efforts to assure projects are completed on time and within budget. 14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards. 15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects. 16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting. 	<ul style="list-style-type: none"> 6) Compile data and write reports regarding existing or potential electrical engineering studies or projects. 7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 8) Prepare specifications for purchases of materials or equipment. 9) Estimate labour, material, or construction costs for budget preparation purposes. 10) Supervise or train project team members, as necessary. 11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 12) Investigate customer or public complaints to determine the nature and extent of problems. 13) Oversee project production efforts to assure projects are completed on time and within budget. 14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards. 15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects. 16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.

AREA	Electrical Works (Radio Frequency Protection (RFP) System)	Electrical Works (Maintenance)
	17) Plan layout of electric power generating plants or distribution lines or stations. 18) Assist in developing capital project programmes for new equipment or major repairs.	17) Plan layout of electric power generating plants or distribution lines or stations. 18) Assist in developing capital project programmes for new equipment or major repairs.
LEVEL 4	<u>Assistant Electrical Engineer</u> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products. 3) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 4) Assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 5) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 6) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.	<u>Assistant Electrical Engineer</u> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products. 3) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 4) Assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 5) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 6) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.

AREA	Electrical Works (Radio Frequency Protection (RFP) System)	Electrical Works (Maintenance)
	<p>7) Assist to prepare specifications for purchases of materials or equipment.</p> <p>8) Assist to estimate labour, material, or construction costs for budget preparation purposes.</p> <p>9) Assist to supervise or train project team members, as necessary.</p> <p>10) Assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>11) Assist to investigate customer or public complaints to determine the nature and extent of problems.</p> <p>12) Assist to oversee project production efforts to assure projects are completed on time and within budget.</p> <p>13) Assist to inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>14) Assist to assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>15) Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>16) Assist to plan layout of electric power generating plants or distribution lines or stations.</p>	<p>7) Assist to prepare specifications for purchases of materials or equipment.</p> <p>8) Assist to estimate labour, material, or construction costs for budget preparation purposes.</p> <p>9) Assist to supervise or train project team members, as necessary.</p> <p>10) Assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>11) Assist to investigate customer or public complaints to determine the nature and extent of problems.</p> <p>12) Assist to oversee project production efforts to assure projects are completed on time and within budget.</p> <p>13) Assist to inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>14) Assist to assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>15) Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>16) Assist to plan layout of electric power generating plants or distribution lines or stations.</p>

AREA	Electrical Works (Radio Frequency Protection (RFP) System)	Electrical Works (Maintenance)
LEVEL 3	<p><u>Electrical Supervisor</u></p> <ol style="list-style-type: none"> 1) Troubleshoot and rectify electrical problem within work scope. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for RFP system. 17) Lead and manage wireman. 	<p><u>Electrical Supervisor</u></p> <ol style="list-style-type: none"> 1) Troubleshoot and rectify electrical problem within work scope. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for electrical works maintenance. 17) Lead and manage wireman.

AREA	Electrical Works (Radio Frequency Protection (RFP) System)	Electrical Works (Maintenance)
LEVEL 2	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform electrical system testing or continuity circuits test. 6) Record electrical data. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation. 	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform electrical system testing or continuity circuits test. 6) Record electrical data. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.
LEVEL 1	<p><u>Wireman</u></p> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation. 	<p><u>Wireman</u></p> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.

Table 4.35: List of Occupational Responsibilities for Group 432 based on Table 4.13 (5 of 12)

AREA	Plumbing Works (Cold Water System)	Plumbing Works (Hot Water System)	Plumbing Works (Sanitary System)
LEVEL 8	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function.

AREA	Plumbing Works (Cold Water System)	Plumbing Works (Hot Water System)	Plumbing Works (Sanitary System)
	<ul style="list-style-type: none"> 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liaise and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety, 	<ul style="list-style-type: none"> 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liaise and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety, 	<ul style="list-style-type: none"> 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liaise and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety,

AREA	Plumbing Works (Cold Water System)	Plumbing Works (Hot Water System)	Plumbing Works (Sanitary System)
	<p>health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>
LEVEL 6	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p> <p>6) Liase and coordinates with consultant for M&E submission and approval.</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p> <p>6) Liase and coordinates with consultant for M&E submission and approval.</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p> <p>6) Liase and coordinates with consultant for M&E submission and approval.</p>

AREA	Plumbing Works (Cold Water System)	Plumbing Works (Hot Water System)	Plumbing Works (Sanitary System)
	<p>7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue.</p> <p>8) Participate in construction management process for smooth progress of M&E works.</p>	<p>7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue.</p> <p>8) Participate in construction management process for smooth progress of M&E works.</p>	<p>7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue.</p> <p>8) Participate in construction management process for smooth progress of M&E works.</p>
LEVEL 5	<p><u>Mechanical Engineer</u></p> <p>1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks.</p> <p>2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements.</p> <p>3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products.</p> <p>4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.</p>	<p><u>Mechanical Engineer</u></p> <p>1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks.</p> <p>2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements.</p> <p>3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products.</p> <p>4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.</p>	<p><u>Mechanical Engineer</u></p> <p>1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks.</p> <p>2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements.</p> <p>3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products.</p> <p>4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.</p>

AREA	Plumbing Works (Cold Water System)	Plumbing Works (Hot Water System)	Plumbing Works (Sanitary System)
	<p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Investigate customer or public complaints to determine the nature and extent of problems.</p>	<p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>	<p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>

AREA	Plumbing Works (Cold Water System)	Plumbing Works (Hot Water System)	Plumbing Works (Sanitary System)
	<p>12)Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>13)Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>14)Design systems or components that minimize energy requirements.</p> <p>15)Plan layout of power generating plants or distribution lines or stations.</p> <p>16)Assist in developing capital project programs for new equipment or major repairs</p>	<p>12)Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13)Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14)Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15)Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16)Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17)Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18)Assist in developing capital project programs for new equipment or major repairs.</p>	<p>12)Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13)Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14)Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15)Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16)Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17)Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18)Assist in developing capital project programs for new equipment or major repairs.</p>

AREA	Plumbing Works (Cold Water System)	Plumbing Works (Hot Water System)	Plumbing Works (Sanitary System)
LEVEL 4	<p><u>Assistant Mechanical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 	<p><u>Assistant Mechanical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 	<p><u>Assistant Mechanical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary.

AREA	Plumbing Works (Cold Water System)	Plumbing Works (Hot Water System)	Plumbing Works (Sanitary System)
	7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.
LEVEL 3	<u>Mechanical Supervisor</u> 1) Troubleshoot and rectify electrical problem within work scope. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings.	<u>Mechanical Supervisor</u> 1) Troubleshoot and rectify electrical problem within work scope. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings.	<u>Mechanical Supervisor</u> 1) Troubleshoot and rectify electrical problem within work scope. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings.

AREA	Plumbing Works (Cold Water System)	Plumbing Works (Hot Water System)	Plumbing Works (Sanitary System)
	10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for mechanical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for plumbing works 17) Lead and manage team.	10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for mechanical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for plumbing works.. 17) Lead and manage team.	10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for mechanical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for plumbing works. 17) Lead and manage team.
LEVEL 2	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform pipe system testing.	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform pipe system testing .	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform pipe system testing.

AREA	Plumbing Works (Cold Water System)	Plumbing Works (Hot Water System)	Plumbing Works (Sanitary System)
	6) Record plumbing system data/information. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.	6) Record plumbing system data/information. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.	6) Record plumbing system data/information. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.
LEVEL 1	<u>Pipe Fitter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Attach pipes to walls, structures, or fixtures. 6) Prepare equipment for pipe testing. 7) Assist site works according to instruction. 8) Assist routine maintenance in accordance to routine schedule. 9) Assist in materials loading and unloading activities.	<u>Pipe Fitter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Attach pipes to walls, structures, or fixtures . 6) Prepare equipment for pipe testing. 7) Assist site works according to instruction. 8) Assist routine maintenance in accordance to routine schedule. 9) Assist in materials loading and unloading activities.	<u>Pipe Fitter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Attach pipes to walls, structures, or fixtures. 6) Prepare equipment for pipe testing. 7) Assist site works according to instruction. 8) Assist routine maintenance in accordance to routine schedule. 9) Assist in materials loading and unloading activities.

AREA	Plumbing Works (Cold Water System)	Plumbing Works (Hot Water System)	Plumbing Works (Sanitary System)
	10) Assist to measure, mark or record measurements. 11) Perform housekeeping. 12) Adhere to safety, health and environment regulation.	10) Assist to measure, mark or record measurements. 11) Perform housekeeping. 12) Adhere to safety, health and environment regulation.	10) Assist to measure, mark or record measurements. 11) Perform housekeeping. 12) Adhere to safety, health and environment regulation.

Table 4.36: List of Occupational Responsibilities for Group 432 based on Table 4.13 and Table 4.14 (6 of 12)

AREA	Plumbing Works (Water Tank Installation)	Plumbing Works (Storm Water System)
LEVEL 8	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme.

AREA	Plumbing Works (Water Tank Installation)	Plumbing Works (Storm Water System)
	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk. 	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk.
LEVEL 6	<p><u>M&E Manager</u></p> <ul style="list-style-type: none"> 1) Attend and coordinate all M&E matters with various consultant and relevant authorities. 2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied. 3) Implement M&E best practice project. 4) Lead standardisation of M&E design across various asset classes 	<p><u>M&E Manager</u></p> <ul style="list-style-type: none"> 1) Attend and coordinate all M&E matters with various consultant and relevant authorities. 2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied. 3) Implement M&E best practice project. 4) Lead standardisation of M&E design across various asset classes

AREA	Plumbing Works (Water Tank Installation)	Plumbing Works (Storm Water System)
	<ul style="list-style-type: none"> 5) Implement cost management to ensure M&E design is efficient and meets project requirement. 6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works. 	<ul style="list-style-type: none"> 5) Implement cost management to ensure M&E design is efficient and meets project requirement. 6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.
LEVEL 5	<p><u>Mechanical Engineer</u></p> <ul style="list-style-type: none"> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 	<p><u>Mechanical Engineer</u></p> <ul style="list-style-type: none"> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.

AREA	Plumbing Works (Water Tank Installation)	Plumbing Works (Storm Water System)
	<ul style="list-style-type: none"> 6) Compile data and write reports regarding existing or potential electrical engineering studies or projects. 7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 8) Prepare specifications for purchases of materials or equipment. 9) Estimate labour, material, or construction costs for budget preparation purposes. 10) Supervise or train project team members, as necessary. 11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 12) Investigate customer or public complaints to determine the nature and extent of problems. 13) Oversee project production efforts to assure projects are completed on time and within budget. 14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards. 15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects. 16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting. 	<ul style="list-style-type: none"> 6) Compile data and write reports regarding existing or potential electrical engineering studies or projects. 7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 8) Prepare specifications for purchases of materials or equipment. 9) Estimate labour, material, or construction costs for budget preparation purposes. 10) Supervise or train project team members, as necessary. 11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 12) Investigate customer or public complaints to determine the nature and extent of problems. 13) Oversee project production efforts to assure projects are completed on time and within budget. 14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards. 15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects. 16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.

AREA	Plumbing Works (Water Tank Installation)	Plumbing Works (Storm Water System)
	17) Plan layout of electric power generating plants or distribution lines or stations. 18) Assist in developing capital project programmes for new equipment or major repairs.	17) Plan layout of electric power generating plants or distribution lines or stations. 18) Assist in developing capital project programmes for new equipment or major repairs.
LEVEL 4	<u>Assistant Mechanical Engineer</u> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	<u>Assistant Mechanical Engineer</u> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.

AREA	Plumbing Works (Water Tank Installation)	Plumbing Works (Storm Water System)
LEVEL 3	<p><u>Mechanical Supervisor</u></p> <ol style="list-style-type: none"> 1) Troubleshoot and rectify electrical problem within work scope. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for mechanical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for plumbing works. 17) Lead and manage team. 	<p><u>Mechanical Supervisor</u></p> <ol style="list-style-type: none"> 1) Troubleshoot and rectify electrical problem within work scope. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for mechanical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for plumbing works. 17) Lead and manage team.

AREA	Plumbing Works (Water Tank Installation)	Plumbing Works (Storm Water System)
LEVEL 2	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform pipe system testing. 6) Record plumbing system data/information. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation. 	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform pipe system testing. 6) Record plumbing system data/information. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.
LEVEL 1	<p><u>Pipe Fitter</u></p> <ol style="list-style-type: none"> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Attach pipes to walls, structures, or fixtures. 6) Prepare equipment for pipe testing. 7) Assist site works according to instruction. 8) Assist routine maintenance in accordance to routine schedule. 9) Assist in materials loading and unloading activities. 	<p><u>Pipe Fitter</u></p> <ol style="list-style-type: none"> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Attach pipes to walls, structures, or fixtures. 6) Prepare equipment for pipe testing. 7) Assist site works according to instruction. 8) Assist routine maintenance in accordance to routine schedule. 9) Assist in materials loading and unloading activities.

AREA	Plumbing Works (Water Tank Installation)	Plumbing Works (Storm Water System)
	10) Assist to measure, mark or record measurements. 11) Perform housekeeping. 12) Adhere to safety, health and environment regulation.	10) Assist to measure, mark or record measurements. 11) Perform housekeeping. 12) Adhere to safety, health and environment regulation.

Table 4.37: List of Occupational Responsibilities for Group 432 based on Table 4.14 (7 of 12)

AREA	Plumbing Works (Solar Heating System)	Plumbing Works (Maintenance)
LEVEL 8	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme.

AREA	Plumbing Works (Solar Heating System)	Plumbing Works (Maintenance)
	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk. 	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk.
LEVEL 6	<p><u>M&E Manager</u></p> <ul style="list-style-type: none"> 1) Attend and coordinate all M&E matter with various consultant and relevant authorities. 2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied. 3) Implement M&E best practice project. 4) Lead standardisation of M&E design across various asset classes. 	<p><u>M&E Manager</u></p> <ul style="list-style-type: none"> 1) Attend and coordinate all M&E matter with various consultant and relevant authorities. 2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied. 3) Implement M&E best practice project. 4) Lead standardisation of M&E design across various asset classes.

AREA	Plumbing Works (Solar Heating System)	Plumbing Works (Maintenance)
	<ul style="list-style-type: none"> 5) Implement cost management to ensure M&E design is efficient and meets project requirement. 6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works. 	<ul style="list-style-type: none"> 5) Implement cost management to ensure M&E design is efficient and meets project requirement. 6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.
LEVEL 5	<p><u>Mechanical Engineer</u></p> <ul style="list-style-type: none"> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 	<p><u>Mechanical Engineer</u></p> <ul style="list-style-type: none"> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.

AREA	Plumbing Works (Solar Heating System)	Plumbing Works (Maintenance)
	<p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p>	<p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p>

AREA	Plumbing Works (Solar Heating System)	Plumbing Works (Maintenance)
	17) Plan layout of electric power generating plants or distribution lines or stations. 18) Assist in developing capital project programs for new equipment or major repairs.	17) Plan layout of electric power generating plants or distribution lines or stations. 18) Assist in developing capital project programs for new equipment or major repairs.
LEVEL 4	<u>Assistant Mechanical Engineer</u> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	<u>Assistant Mechanical Engineer</u> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.

AREA	Plumbing Works (Solar Heating System)	Plumbing Works (Maintenance)
LEVEL 3	<p><u>Mechanical Supervisor</u></p> <ol style="list-style-type: none"> 1) Troubleshoot and rectify electrical problem within work scope. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for mechanical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for plumbing works. 17) Lead and manage team. 	<p><u>Mechanical Supervisor</u></p> <ol style="list-style-type: none"> 1) Troubleshoot and rectify electrical problem within work scope. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk 12) Supervise subordinate work. 13) Arrange and perform maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for mechanical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for plumbing works. 17) Lead and manage team.

AREA	Plumbing Works (Solar Heating System)	Plumbing Works (Maintenance)
LEVEL 2	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform pipe system testing. 6) Record plumbing system data/information. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation. 	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform pipe system testing. 6) Record plumbing system data/information. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.
LEVEL 1	<p><u>Pipe Fitter</u></p> <ol style="list-style-type: none"> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Attach pipes to walls, structures, or fixtures. 6) Prepare equipment for pipe testing. 7) Assist site works according to instruction. 8) Assist routine maintenance in accordance to routine schedule. 	<p><u>Pipe Fitter</u></p> <ol style="list-style-type: none"> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Attach pipes to walls, structures, or fixtures. 6) Prepare equipment for pipe testing. 7) Assist site works according to instruction. 8) Assist routine maintenance in accordance to routine schedule.

AREA	Plumbing Works (Solar Heating System)	Plumbing Works (Maintenance)
	9) Assist in materials loading and unloading activities. 10) Assist to measure, mark or record measurements. 11) Perform housekeeping. 12) Adhere to safety, health and environment regulation.	9) Assist in materials loading and unloading activities. 10) Assist to measure, mark or record measurements. 11) Perform housekeeping. 12) Adhere to safety, health and environment regulation.

Table 4.38: List of Occupational Responsibilities for Group 432 based on Table 4.14 (8 of 12)

AREA	Mechanical Works (Air-Conditioning & Refrigeration System)	Mechanical Works (Ventilation System)	Mechanical Works (Heating System)
LEVEL 8	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function.

AREA	Mechanical Works (Air-Conditioning & Refrigeration System)	Mechanical Works (Ventilation System)	Mechanical Works (Heating System)
	<ul style="list-style-type: none"> 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liaise and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety, 	<ul style="list-style-type: none"> 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liaise and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety, 	<ul style="list-style-type: none"> 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liaise and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety,

AREA	Mechanical Works (Air-Conditioning & Refrigeration System)	Mechanical Works (Ventilation System)	Mechanical Works (Heating System)
	<p>health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>health and environmental officer to ensure compliance with regulation</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>
LEVEL 6	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p> <p>6) Liase and coordinates with consultant for M&E submission and approval.</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p> <p>6) Liase and coordinates with consultant for M&E submission and approval.</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p> <p>6) Liase and coordinates with consultant for M&E submission and approval.</p>

AREA	Mechanical Works (Air-Conditioning & Refrigeration System)	Mechanical Works (Ventilation System)	Mechanical Works (Heating System)
	7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.	7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.	7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.
LEVEL 5	<u>Mechanical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.	<u>Mechanical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.	<u>Mechanical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.

AREA	Mechanical Works (Air-Conditioning & Refrigeration System)	Mechanical Works (Ventilation System)	Mechanical Works (Heating System)
	<p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>	<p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>	<p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>

AREA	Mechanical Works (Air-Conditioning & Refrigeration System)	Mechanical Works (Ventilation System)	Mechanical Works (Heating System)
	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programs for new equipment or major repairs.</p>	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programs for new equipment or major repairs.</p>	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programs for new equipment or major repairs.</p>

AREA	Mechanical Works (Air-Conditioning & Refrigeration System)	Mechanical Works (Ventilation System)	Mechanical Works (Heating System)
LEVEL 4	<p><u>Assistant Mechanical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 	<p><u>Assistant Mechanical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 	<p><u>Assistant Mechanical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary.

AREA	Mechanical Works (Air-Conditioning & Refrigeration System)	Mechanical Works (Ventilation System)	Mechanical Works (Heating System)
	7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.
LEVEL 3	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope. 8) Carry out regular work inspections. 9) Supervise subordinate work.	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope. 8) Carry out regular work inspections. 9) Supervise subordinate work.	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope. 8) Carry out regular work inspections. 9) Supervise subordinate work.

AREA	Mechanical Works (Air-Conditioning & Refrigeration System)	Mechanical Works (Ventilation System)	Mechanical Works (Heating System)
	10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety, health and environment regulation.	10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety, health and environment regulation.	10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety, health and environment regulation.
LEVEL 2	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule.	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule.	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule.

AREA	Mechanical Works (Air-Conditioning & Refrigeration System)	Mechanical Works (Ventilation System)	Mechanical Works (Heating System)
	4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing. 7) Record electrical data. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing. 7) Record electrical data. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing. 7) Record electrical data. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.
LEVEL 1	<u>Mechanical Fitter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Hack surface and install piping for air-conditioning and refrigeration system.	<u>Mechanical Fitter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Hack surface and install piping for air-conditioning and refrigeration system.	<u>Mechanical Fitter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Hack surface and install piping for air-conditioning and refrigeration system.

AREA	Mechanical Works (Air-Conditioning & Refrigeration System)	Mechanical Works (Ventilation System)	Mechanical Works (Heating System)
	<ul style="list-style-type: none"> 6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction. 9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety health and environment regulation. 	<ul style="list-style-type: none"> 6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction. 9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety health and environment regulation. 	<ul style="list-style-type: none"> 6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction. 9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety health and environment regulation.

Table 4.39: List of Occupational Responsibilities for Group 432 based on Table 4.15 and Table 4.16 (9 of 12)

AREA	Mechanical Works (Fire Protection System)	Mechanical Works (Pumping System)	Mechanical Works (Gas Piping System)
LEVEL 8	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function.

AREA	Mechanical Works (Fire Protection System)	Mechanical Works (Pumping System)	Mechanical Works (Gas Piping System)
	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work program.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work program.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work program.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>

AREA	Mechanical Works (Fire Protection System)	Mechanical Works (Pumping System)	Mechanical Works (Gas Piping System)
	<p>with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>
LEVEL 6	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p>

AREA	Mechanical Works (Fire Protection System)	Mechanical Works (Pumping System)	Mechanical Works (Gas Piping System)
	6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.	6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.	6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.
LEVEL 5	<u>Mechanical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or	<u>Mechanical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or	<u>Mechanical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or

AREA	Mechanical Works (Fire Protection System)	Mechanical Works (Pumping System)	Mechanical Works (Gas Piping System)
	<p>systems for commercial, industrial, or domestic purposes.</p> <p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>	<p>systems for commercial, industrial, or domestic purposes.</p> <p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>	<p>systems for commercial, industrial, or domestic purposes.</p> <p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>

AREA	Mechanical Works (Fire Protection System)	Mechanical Works (Pumping System)	Mechanical Works (Gas Piping System)
	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programs for new equipment or major repairs.</p>	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programs for new equipment or major repairs.</p>	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programs for new equipment or major repairs.</p>

AREA	Mechanical Works (Fire Protection System)	Mechanical Works (Pumping System)	Mechanical Works (Gas Piping System)
LEVEL 4	<p><u>Assistant Mechanical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 	<p><u>Assistant Mechanical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 	<p><u>Assistant Mechanical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary.

AREA	Mechanical Works (Fire Protection System)	Mechanical Works (Pumping System)	Mechanical Works (Gas Piping System)
	7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.
LEVEL 3	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope. 8) Carry out regular work inspections. 9) Supervise subordinate work.	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope \. 8) Carry out regular work inspections. 9) Supervise subordinate work.	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope. 8) Carry out regular work inspections. 9) Supervise subordinate work.

AREA	Mechanical Works (Fire Protection System)	Mechanical Works (Pumping System)	Mechanical Works (Gas Piping System)
	10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety health and environment regulation.	10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report 16) Prepare reports for mechanical works 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety health and environment regulation.	10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety health and environment regulation.
LEVEL 2	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule.	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule.	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule.

AREA	Mechanical Works (Fire Protection System)	Mechanical Works (Pumping System)	Mechanical Works (Gas Piping System)
	4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing. 7) Record electrical data. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing. 7) Record electrical data. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing. 7) Record electrical data. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.
LEVEL 1	<u>Mechanical Fitter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Hack surface and install piping for air-conditioning and refrigeration system.	<u>Mechanical Fitter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Hack surface and install piping for air-conditioning and refrigeration system.	<u>Mechanical Fitter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Hack surface and install piping for air-conditioning and refrigeration system.

AREA	Mechanical Works (Fire Protection System)	Mechanical Works (Pumping System)	Mechanical Works (Gas Piping System)
	6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction 9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety, health and environment regulation.	6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction 9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety, health and environment regulation.	6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction. 9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities.. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety, health and environment regulation.

Table 4.40: List of Occupational Responsibilities for Group 432 based on Table 4.16 and Table 4.17 (10 of 12)

AREA	Mechanical Works (Thermal Insulation)	Mechanical Works (Sound & Vibration Insulation)	Mechanical Works (Elevator System)
LEVEL 8	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams. 	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams. 	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams.

AREA	Mechanical Works (Thermal Insulation)	Mechanical Works (Sound & Vibration Insulation)	Mechanical Works (Elevator System)
LEVEL 7	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work program. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work program. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work program. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.

AREA	Mechanical Works (Thermal Insulation)	Mechanical Works (Sound & Vibration Insulation)	Mechanical Works (Elevator System)
	9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk.	9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk.	9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk.
LEVEL 6	<u>M&E Manager</u> 1) Attend and coordinate all M&E matter with various consultant and relevant authorities. 2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied. 3) Implement M&E best practice project. 4) Lead standardisation of M&E design across various asset classes.	<u>M&E Manager</u> 1) Attend and coordinate all M&E matter with various consultant and relevant authorities. 2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied. 3) Implement M&E best practice project. 4) Lead standardisation of M&E design across various asset classes.	<u>M&E Manager</u> 1) Attend and coordinate all M&E matter with various consultant and relevant authorities 2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied with 3) Implement M&E best practice project. 4) Lead standardisation of M&E design across various asset classes.

AREA	Mechanical Works (Thermal Insulation)	Mechanical Works (Sound & Vibration Insulation)	Mechanical Works (Elevator System)
	5) Implement cost management to ensure M&E design is efficient and meets project requirement. 6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.	5) Implement cost management to ensure M&E design is efficient and meets project requirement. 6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.	5) Implement cost management to ensure M&E design is efficient and meets project requirement. 6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.
LEVEL 5	<u>Mechanical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products.	<u>Mechanical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products.	<u>Mechanical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products.

AREA	Mechanical Works (Thermal Insulation)	Mechanical Works (Sound & Vibration Insulation)	Mechanical Works (Elevator System)
	<p>4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.</p> <p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p>	<p>4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.</p> <p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p>	<p>4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.</p> <p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p>

AREA	Mechanical Works (Thermal Insulation)	Mechanical Works (Sound & Vibration Insulation)	Mechanical Works (Elevator System)
	<p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p>	<p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p>	<p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p>

AREA	Mechanical Works (Thermal Insulation)	Mechanical Works (Sound & Vibration Insulation)	Mechanical Works (Elevator System)
	18) Assist in developing capital project programmes for new equipment or major repairs.	18) Assist in developing capital project programmes for new equipment or major repairs.	18) Assist in developing capital project programmes for new equipment or major repairs.
LEVEL 4	<u>Assistant Mechanical Engineer</u> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment.	<u>Assistant Mechanical Engineer</u> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment.	<u>Assistant Mechanical Engineer</u> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment.

AREA	Mechanical Works (Thermal Insulation)	Mechanical Works (Sound & Vibration Insulation)	Mechanical Works (Elevator System)
	6) Assist to supervise or train project team members, as necessary. 7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	6) Assist to supervise or train project team members, as necessary. 7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	6) Assist to supervise or train project team members, as necessary. 7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.
LEVEL 3	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope. 8) Carry out regular work inspections.	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing . 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope . 8) Carry out regular work inspections.	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope. 8) Carry out regular work inspections.

AREA	Mechanical Works (Thermal Insulation)	Mechanical Works (Sound & Vibration Insulation)	Mechanical Works (Elevator System)
	9) Supervise subordinate work. 10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety health and environment regulation.	9) Supervise subordinate work. 10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety health and environment regulation.	9) Supervise subordinate work. 10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety health and environment regulation.
LEVEL 2	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing.	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing.	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing.

AREA	Mechanical Works (Thermal Insulation)	Mechanical Works (Sound & Vibration Insulation)	Mechanical Works (Elevator System)
	3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing. 7) Record electrical data. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing 7) Record electrical data. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing 7) Record electrical data. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.
LEVEL 1	<u>Mechanical Fitter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials.	<u>Mechanical Fitter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials.	<u>Mechanical Fitter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials.

AREA	Mechanical Works (Thermal Insulation)	Mechanical Works (Sound & Vibration Insulation)	Mechanical Works (Elevator System)
	5) Hack surface and install piping for air-conditioning and refrigeration system. 6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction. 9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety, health and environment regulation.	5) Hack surface and install piping for air-conditioning and refrigeration system. 6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction. 9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety, health and environment regulation.	5) Hack surface and install piping for air-conditioning and refrigeration system. 6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction. 9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety, health and environment regulation.

Table 4.41: List of Occupational Responsibilities for Group 432 based on Table 4.17 and Table 4.18 (11 of 12)

AREA	Mechanical Works (Escalator & Travellator System)	Mechanical Works (Automated Building Elements)	Mechanical Works (Vacuum Cleaning System)
LEVEL 8	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function.

AREA	Mechanical Works (Escalator & Travellator System)	Mechanical Works (Automated Building Elements)	Mechanical Works (Vacuum Cleaning System)
	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liase and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate program or instruct construction site manager to conform with safety,</p>	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liase and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate program or instruct construction site manager to conform with safety,</p>	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liase and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate program or instruct construction site manager to conform with safety,</p>

AREA	Mechanical Works (Escalator & Travellator System)	Mechanical Works (Automated Building Elements)	Mechanical Works (Vacuum Cleaning System)
	<p>health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>
LEVEL 6	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p> <p>6) Liase and coordinates with consultant for M&E submission and approval.</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p> <p>6) Liase and coordinates with consultant for M&E submission and approval.</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p> <p>6) Liase and coordinates with consultant for M&E submission and approval.</p>

AREA	Mechanical Works (Escalator & Travellator System)	Mechanical Works (Automated Building Elements)	Mechanical Works (Vacuum Cleaning System)
	7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.	7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.	7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.
LEVEL 5	<u>Mechanical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.	<u>Mechanical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.	<u>Mechanical Engineer</u> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.

AREA	Mechanical Works (Escalator & Travellator System)	Mechanical Works (Automated Building Elements)	Mechanical Works (Vacuum Cleaning System)
	<p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>	<p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>	<p>5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.</p> <p>6) Compile data and write reports regarding existing or potential electrical engineering studies or projects.</p> <p>7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p>

AREA	Mechanical Works (Escalator & Travellator System)	Mechanical Works (Automated Building Elements)	Mechanical Works (Vacuum Cleaning System)
	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programmes for new equipment or major repairs.</p>	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programmes for new equipment or major repairs.</p>	<p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programmes for new equipment or major repairs.</p>

AREA	Mechanical Works (Escalator & Travellator System)	Mechanical Works (Automated Building Elements)	Mechanical Works (Vacuum Cleaning System)
LEVEL 4	<p><u>Assistant Mechanical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 	<p><u>Assistant Mechanical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 	<p><u>Assistant Mechanical Engineer</u></p> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary.

AREA	Mechanical Works (Escalator & Travellator System)	Mechanical Works (Automated Building Elements)	Mechanical Works (Vacuum Cleaning System)
	7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.
LEVEL 3	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope. 8) Carry out regular work inspections. 9) Supervise subordinate work.	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope. 8) Carry out regular work inspections. 9) Supervise subordinate work.	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope. 8) Carry out regular work inspections 9) Supervise subordinate work.

AREA	Mechanical Works (Escalator & Travellator System)	Mechanical Works (Automated Building Elements)	Mechanical Works (Vacuum Cleaning System)
	10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety, health and environment regulation.	10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety, health and environment regulation.	10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety, health and environment regulation.
LEVEL 2	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing.	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing.	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing.

AREA	Mechanical Works (Escalator & Travellator System)	Mechanical Works (Automated Building Elements)	Mechanical Works (Vacuum Cleaning System)
	3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing. 7) Record electrical data. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing. 7) Record electrical data. 8) Perform housekeeping. 10) Adhere to safety, health and environment regulation.	3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing. 7) Record electrical data. 8) Perform housekeeping. 10) Adhere to safety, health and environment regulation.
LEVEL 1	<u>Mechanical Fitter</u> 1) Interpret specifications in construction/ shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials.	<u>Mechanical Fitter</u> 1) Interpret specifications in construction/ shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials.	<u>Mechanical Fitter</u> 1) Interpret specifications in construction/ shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery 4) Prepare materials.

AREA	Mechanical Works (Escalator & Travellator System)	Mechanical Works (Automated Building Elements)	Mechanical Works (Vacuum Cleaning System)
	5) Hack surface and install piping for air-conditioning and refrigeration system. 6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction. 9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety, health and environment regulation.	5) Hack surface and install piping for air-conditioning and refrigeration system. 6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction. 9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety, health and environment regulation.	5) Hack surface and install piping for air-conditioning and refrigeration system. 6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction. 9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety, health and environment regulation.

Table 4.42: List of Occupational Responsibilities for Group 432 based on Table 4.18 (12 of 12)

AREA	Mechanical Works (Building Dehumidification System)	Mechanical Works (Maintenance)
LEVEL 8	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme.

AREA	Mechanical Works (Building Dehumidification System)	Mechanical Works (Maintenance)
	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk. 	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk.
LEVEL 6	<p><u>M&E Manager</u></p> <ul style="list-style-type: none"> 1) Attend and coordinate all M&E matter with various consultant and relevant authorities. 2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied. 3) Implement M&E best practice project. 4) Lead standardisation of M&E design across various asset classes. 	<p><u>M&E Manager</u></p> <ul style="list-style-type: none"> 1) Attend and coordinate all M&E matter with various consultant and relevant authorities. 2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied. 3) Implement M&E best practice project. 4) Lead standardisation of M&E design across various asset classes.

AREA	Mechanical Works (Building Dehumidification System)	Mechanical Works (Maintenance)
	<ul style="list-style-type: none"> 5) Implement cost management to ensure M&E design is efficient and meets project requirement. 6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works. 	<ul style="list-style-type: none"> 5) Implement cost management to ensure M&E design is efficient and meets project requirement. 6) Liase and coordinates with consultant for M&E submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works.
LEVEL 5	<p><u>Mechanical Engineer</u></p> <ul style="list-style-type: none"> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 	<p><u>Mechanical Engineer</u></p> <ul style="list-style-type: none"> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements.

AREA	Mechanical Works (Building Dehumidification System)	Mechanical Works (Maintenance)
	<ul style="list-style-type: none"> 6) Compile data and write reports regarding existing or potential electrical engineering studies or projects. 7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 8) Prepare specifications for purchases of materials or equipment. 9) Estimate labour, material, or construction costs for budget preparation purposes. 10) Supervise or train project team members, as necessary. 11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 12) Investigate customer or public complaints to determine the nature and extent of problems. 13) Oversee project production efforts to assure projects are completed on time and within budget. 14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards. 15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects. 16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting. 	<ul style="list-style-type: none"> 6) Compile data and write reports regarding existing or potential electrical engineering studies or projects. 7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 8) Prepare specifications for purchases of materials or equipment. 9) Estimate labour, material, or construction costs for budget preparation purposes. 10) Supervise or train project team members, as necessary. 11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 12) Investigate customer or public complaints to determine the nature and extent of problems. 13) Oversee project production efforts to assure projects are completed on time and within budget. 14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards. 15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects. 16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.

AREA	Mechanical Works (Building Dehumidification System)	Mechanical Works (Maintenance)
	17) Plan layout of electric power generating plants or distribution lines or stations. 18) Assist in developing capital project programs for new equipment or major repairs.	17) Plan layout of electric power generating plants or distribution lines or stations. 18) Assist in developing capital project programs for new equipment or major repairs.
LEVEL 4	<u>Assistant Mechanical Engineer</u> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	<u>Assistant Mechanical Engineer</u> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.

AREA	Mechanical Works (Building Dehumidification System)	Mechanical Works (Maintenance)
LEVEL 3	<p><u>Mechanical Supervisor</u></p> <ol style="list-style-type: none"> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope. 8) Carry out regular work inspections. 9) Supervise subordinate work. 10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk.. 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety health and environment regulation. 	<p><u>Mechanical Supervisor</u></p> <ol style="list-style-type: none"> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope. 8) Carry out regular work inspections. 9) Supervise subordinate work. 10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety health and environment regulation.

AREA	Mechanical Works (Building Dehumidification System)	Mechanical Works (Maintenance)
LEVEL 2	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing. 7) Record electrical data. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation. 	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing. 7) Record electrical data. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.
LEVEL 1	<p><u>Mechanical Fitter</u></p> <ol style="list-style-type: none"> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Hack surface and install piping for air-conditioning and refrigeration system. 6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction. 	<p><u>Mechanical Fitter</u></p> <ol style="list-style-type: none"> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Hack surface and install piping for air-conditioning and refrigeration system. 6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction.

AREA	Mechanical Works (Building Dehumidification System)	Mechanical Works (Maintenance)
	9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety, health and environment regulation.	9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety, health and environment regulation.

Table 4.43: List of Occupational Responsibilities for Group 433 based on Table 4.19 (1 of 4)

AREA	Architectural Works (Wall Construction)	Architectural Works (Floor Construction)	Architectural Works (Ceiling Construction)
LEVEL 8	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function.

AREA	Architectural Works (Wall Construction)	Architectural Works (Floor Construction)	Architectural Works (Ceiling Construction)
	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate program or instruct construction site manager to conform with safety,</p>	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate program or instruct construction site manager to conform with safety,</p>	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate program or instruct construction site manager to conform with safety,</p>

AREA	Architectural Works (Wall Construction)	Architectural Works (Floor Construction)	Architectural Works (Ceiling Construction)
	<p>health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>
LEVEL 6	<p><u>Construction Manager</u></p> <p>1) Attend and coordinate all architectural matter with various consultant and relevant authorities to meet deadlines.</p> <p>2) Review project costing and request budget estimates.</p> <p>3) Review and ensure architectural layout design in term of functionality, buildability, maintainability, cost efficient and sustainability aspect are complied.</p> <p>4) Interpret project brief to identify work sequence and appropriate construction method.</p> <p>5) Prepare work program.</p>	<p><u>Construction Manager</u></p> <p>1) Attend and coordinate all architectural matter with various consultant and relevant authorities to meet deadlines.</p> <p>2) Review project costing and request budget estimates.</p> <p>3) Review and ensure architectural layout design in term of functionality, buildability, maintainability, cost efficient and sustainability aspect are complied</p> <p>4) Interpret project brief to identify work sequence and appropriate construction method.</p> <p>5) Prepare work program.</p>	<p><u>Construction Manager</u></p> <p>1) Attend and coordinate all architectural matter with various consultant and relevant authorities to meet deadlines.</p> <p>2) Review project costing and request budget estimates.</p> <p>3) Review and ensure architectural layout design in term of functionality, buildability, maintainability, cost efficient and sustainability aspect are complied..</p> <p>4) Interpret project brief to identify work sequence and appropriate construction method.</p> <p>5) Prepare work program.</p>

AREA	Architectural Works (Wall Construction)	Architectural Works (Floor Construction)	Architectural Works (Ceiling Construction)
	6) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 7) Inspect or review project deliverables to monitor compliance with requirement. 8) Liaise and coordinates with consultant for architectural submission and approval. 9) Liaise with client, consultant, supplier, contractor, sub-contractor and all relevant parties for all architectural works. 10) Participate in construction management process for smooth progress of architectural works.	6) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 7) Inspect or review project deliverables to monitor compliance with requirement. 8) Liaise and coordinates with consultant for architectural submission and approval. 9) Liaise with client, consultant, supplier, contractor, sub-contractor and all relevant parties for all architectural works. 10) Participate in construction management process for smooth progress of architectural works.	6) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 7) Inspect or review project deliverables to monitor compliance with requirement. 8) Liaise and coordinates with consultant for architectural submission and approval. 9) Liaise with client, consultant, supplier, contractor, sub-contractor and all relevant parties for all architectural works. 10) Participate in construction management process for smooth progress of architectural works.
LEVEL 5	<u>Architect</u> 1) Manage the coordination and overall integration of architectural works to meet deadlines. 2) Review and propose for design changes. 3) Interpret method statement to determine and monitor execution of procedure/work sequence for the project.	<u>Architect</u> 1) Manage the coordination and overall integration of architectural works to meet deadlines. 2) Review and propose for design changes. 3) Interpret method statement to determine and monitor execution of procedure/work sequence for the project.	<u>Architect</u> 1) Manage the coordination and overall integration of architectural works to meet deadlines. 2) Review and propose for design changes. 3) Interpret method statement to determine and monitor execution of procedure/work sequence for the project.

AREA	Architectural Works (Wall Construction)	Architectural Works (Floor Construction)	Architectural Works (Ceiling Construction)
	4) Consult management, production on project specifications or procedures. 5) Proposal presentation, findings and preparation of reports to clients. 6) Prepare of project specifications. 7) Prepare budget preparation and cost estimation. 8) Conduct the recruitment, placement, and evaluation process of architecture staff. 9) Plan or monitor the work progress for installation and testing. 10) Inspect or review project deliverables to monitor compliance with requirement. 11) Develop or implement quality control and environmental protection programme. 12) Perform general administrative functions.	4) Consult management, production on project specifications or procedures. 5) Proposal presentation, findings and preparation of reports to clients. 6) Prepare of project specifications. 7) Prepare budget preparation and cost estimation. 8) Conduct the recruitment, placement, and evaluation process of architecture staff. 9) Plan or monitor the work progress for installation and testing. 10) Inspect or review project deliverables to monitor compliance with requirement. 11) Develop or implement quality control and environmental protection programme. 12) Perform general administrative functions.	4) Consult management, production on project specifications or procedures. 5) Proposal presentation, findings and preparation of reports to clients. 6) Prepare of project specifications. 7) Prepare budget preparation and cost estimation. 8) Conduct the recruitment, placement, and evaluation process of architecture staff. 9) Plan or monitor the work progress for installation and testing. 10) Inspect or review project deliverables to monitor compliance with requirement. 11) Develop or implement quality control and environmental protection programme. 12) Perform general administrative functions.
LEVEL 4	<u>Assistant Architect</u> 1) Assist to manage the coordination and overall integration of architectural works to meet deadlines. 2) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project.	<u>Assistant Architect</u> 1) Assist to manage the coordination and overall integration of architectural works to meet deadlines. 2) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project.	<u>Assistant Architect</u> 1) Assist to manage the coordination and overall integration of architectural works to meet deadlines. 2) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project.

AREA	Architectural Works (Wall Construction)	Architectural Works (Floor Construction)	Architectural Works (Ceiling Construction)
	3) Assist in proposal presentation, findings and preparation of reports to clients. 4) Assist in preparation of project specifications. 5) Assist in budget preparation and cost estimation. 6) Assist in recruitment, placement, and evaluation process of architecture staff. 7) Assist in plan or monitor the work progress for installation and testing. 8) Assist to inspect or review project deliverables to monitor compliance with requirement. 9) Assist to develop or implement quality control and environmental protection programme. 10) Comply with architectural guidelines and standards.	3) Assist in proposal presentation, findings and preparation of reports to clients. 4) Assist in preparation of project specifications. 5) Assist in budget preparation and cost estimation. 6) Assist in recruitment, placement, and evaluation process of architecture staff. 7) Assist in plan or monitor the work progress for installation and testing. 8) Assist to inspect or review project deliverables to monitor compliance with requirement. 9) Assist to develop or implement quality control and environmental protection programme. 10) Comply with architectural guidelines and standards.	3) Assist in proposal presentation, findings and preparation of reports to clients. 4) Assist in preparation of project specifications. 5) Assist in budget preparation and cost estimation. 6) Assist in recruitment, placement, and evaluation process of architecture staff. 7) Assist in plan or monitor the work progress for installation and testing. 8) Assist to inspect or review project deliverables to monitor compliance with requirement. 9) Assist to develop or implement quality control and environmental protection programme. 10) Comply with architectural guidelines and standards.
LEVEL 3	<u>Supervisor</u> 1) Troubleshoot and rectify problem within work scope. 2) Conduct site safety and induction briefing.	<u>Supervisor</u> 1) Troubleshoot and rectify problem within work scope. 2) Conduct site safety and induction briefing.	<u>Supervisor</u> 1) Troubleshoot and rectify problem within work scope. 2) Conduct site safety and induction briefing.

AREA	Architectural Works (Wall Construction)	Architectural Works (Floor Construction)	Architectural Works (Ceiling Construction)
	3) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 4) Coordinate work activities. 5) Monitor usage of equipment or construction sites to verify safety and specification are met. 6) Order or request materials. 7) Supervise subordinate work. 8) Arrange and perform maintenance activities. 9) Conduct training for installation works, operation of machinery and equipment, site safety requirement. 10) Prepare reports for architectural works.	3) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 4) Coordinate work activities. 5) Monitor usage of equipment or construction sites to verify safety and specification are met. 6) Order or request materials. 7) Supervise subordinate work. 8) Arrange and perform maintenance activities. 9) Conduct training for installation works, operation of machinery and equipment, site safety requirement. 10) Prepare reports for architectural works.	3) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 4) Coordinate work activities. 5) Monitor usage of equipment or construction sites to verify safety and specification are met. 6) Order or request materials. 7) Supervise subordinate work. 8) Arrange and perform maintenance activities. 9) Conduct training for installation works, operation of machinery and equipment, site safety requirement 10) Prepare reports for architectural works.
LEVEL 2	<u>Installer</u> 1) Read construction/shop drawing or other specifications to determine methods of installation and tool requirements. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Operate tools, equipment and machinery.	<u>Installer</u> 1) Read construction/shop drawing or other specifications to determine methods of installation and tool requirements. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Operate tools, equipment and machinery.	<u>Installer</u> 1) Read construction/shop drawing or other specifications to determine methods of installation and tool requirements. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Operate tools, equipment and machinery.

AREA	Architectural Works (Wall Construction)	Architectural Works (Floor Construction)	Architectural Works (Ceiling Construction)
	4) Carry out assembling or installation architectural work according to instruction and drawing. 5) Perform inspections and testing work 6) Comply with architectural guidelines and standards. 7) Liase with supervisor to carry out architectural work. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	4) Carry out assembling or installation architectural work according to instruction and drawing. 5) Perform inspections and testing work 6) Comply with architectural guidelines and standards. 7) Liase with supervisor to carry out architectural work. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	4) Carry out assembling or installation architectural work according to instruction and drawing. 5) Perform inspections and testing work. 6) Comply with architectural guidelines and standards. 7) Liase with supervisor to carry out architectural work. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.
LEVEL 1	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping.	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping.	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping.

Table 4.44: List of Occupational Responsibilities for Group 433 based on Table 4.19 and Table 4.20 (2 of 4)

AREA	Architectural Works (Staircase Construction)	Architectural Works (Window Installation)	Architectural Works (Door Installation)
LEVEL 8	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams. 	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams. 	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client 7) Make strategic decision and provide necessary leadership and direction for teams.

AREA	Architectural Works (Staircase Construction)	Architectural Works (Window Installation)	Architectural Works (Door Installation)
LEVEL 7	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.

AREA	Architectural Works (Staircase Construction)	Architectural Works (Window Installation)	Architectural Works (Door Installation)
	9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk.	9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk.	9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk.
LEVEL 6	<u>Construction Manager</u> 1) Attend and coordinate all architectural matter with various consultant and relevant authorities to meet deadlines. 2) Review project costing and request budget estimates. 3) Review and ensure architectural layout design in term of functionality, buildability, maintainability, cost	<u>Construction Manager</u> 1) Attend and coordinate all architectural matter with various consultant and relevant authorities to meet deadlines. 2) Review project costing and request budget estimates. 3) Review and ensure architectural layout design in term of functionality, buildability, maintainability, cost	<u>Construction Manager</u> 1) Attend and coordinate all architectural matter with various consultant and relevant authorities to meet deadlines. 2) Review project costing and request budget estimates. 3) Review and ensure architectural layout design in term of functionality, buildability, maintainability, cost

AREA	Architectural Works (Staircase Construction)	Architectural Works (Window Installation)	Architectural Works (Door Installation)
	<p>efficient and sustainability aspect are complied.</p> <p>4) Interpret project brief to identify work sequence and appropriate construction method.</p> <p>5) Prepare work programme.</p> <p>6) Interpret method statement to determine and monitor execution of procedure/ work sequence for the project.</p> <p>7) Inspect or review project deliverables to monitor compliance with requirement.</p> <p>8) Liase and coordinates with consultant for architectural submission and approval</p> <p>9) Liase with client, consultant, supplier, contractor, sub-contractor and all relevant parties for all architectural works.</p> <p>10) Participate in construction management process for smooth progress of architectural works.</p>	<p>efficient and sustainability aspect are complied.</p> <p>4) Interpret project brief to identify work sequence and appropriate construction method.</p> <p>5) Prepare work programme.</p> <p>6) Interpret method statement to determine and monitor execution of procedure/ work sequence for the project.</p> <p>7) Inspect or review project deliverables to monitor compliance with requirement.</p> <p>8) Liase and coordinates with consultant for architectural submission and approval</p> <p>9) Liase with client, consultant, supplier, contractor, sub-contractor and all relevant parties for all architectural works.</p> <p>10) Participate in construction management process for smooth progress of architectural works.</p>	<p>efficient and sustainability aspect are complied.</p> <p>4) Interpret project brief to identify work sequence and appropriate construction method.</p> <p>5) Prepare work programme.</p> <p>6) Interpret method statement to determine and monitor execution of procedure/ work sequence for the project.</p> <p>7) Inspect or review project deliverables to monitor compliance with requirement.</p> <p>8) Liase and coordinates with consultant for architectural submission and approval</p> <p>9) Liase with client, consultant, supplier, contractor, sub-contractor and all relevant parties for all architectural works.</p> <p>10) Participate in construction management process for smooth progress of architectural works.</p>

AREA	Architectural Works (Staircase Construction)	Architectural Works (Window Installation)	Architectural Works (Door Installation)
LEVEL 5	<p><u>Architect</u></p> <ol style="list-style-type: none"> 1) Manage the coordination and overall integration of architectural works to meet deadlines. 2) Review and propose for design changes. 3) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 4) Consult management, production on project specifications or procedures. 5) Proposal presentation, findings and preparation of reports to clients. 6) Prepare of project specifications. 7) Prepare budget preparation and cost estimation. 8) Conduct the recruitment, placement, and evaluation process of architecture staff. 9) Plan or monitor the work progress for installation and testing. 10) Inspect or review project deliverables to monitor compliance with requirement 11) Develop or implement quality control and environmental protection program. 	<p><u>Architect</u></p> <ol style="list-style-type: none"> 1) Manage the coordination and overall integration of architectural works to meet deadlines. 2) Review and propose for design changes. 3) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 4) Consult management, production on project specifications or procedures. 5) Proposal presentation, findings and preparation of reports to clients. 6) Prepare of project specifications. 7) Prepare budget preparation and cost estimation. 8) Conduct the recruitment, placement, and evaluation process of architecture staff. 9) Plan or monitor the work progress for installation and testing. 10) Inspect or review project deliverables to monitor compliance with requirement 11) Develop or implement quality control and environmental protection program. 	<p><u>Architect</u></p> <ol style="list-style-type: none"> 1) Manage the coordination and overall integration of architectural works to meet deadlines. 2) Review and propose for design changes. 3) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 4) Consult management, production on project specifications or procedures. 5) Proposal presentation, findings and preparation of reports to clients. 6) Prepare of project specifications. 7) Prepare budget preparation and cost estimation. 8) Conduct the recruitment, placement, and evaluation process of architecture staff. 9) Plan or monitor the work progress for installation and testing. 10) Inspect or review project deliverables to monitor compliance with requirement 11) Develop or implement quality control and environmental protection program.

AREA	Architectural Works (Staircase Construction)	Architectural Works (Window Installation)	Architectural Works (Door Installation)
	12) Perform general administrative functions.	12) Perform general administrative functions.	12) Perform general administrative functions.
LEVEL 4	<u>Assistant Architect</u> <ol style="list-style-type: none"> 1) Assist to manage the coordination and overall integration of architectural works to meet deadlines. 2) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project 3) Assist in proposal presentation, findings and preparation of reports to clients. 4) Assist in preparation of project specifications. 5) Assist in budget preparation and cost estimation. 6) Assist in recruitment, placement, and evaluation process of architecture staff. 7) Assist in plan or monitor the work progress for installation and testing. 8) Assist to inspect or review project deliverables to monitor compliance with requirement. 	<u>Assistant Architect</u> <ol style="list-style-type: none"> 1) Assist to manage the coordination and overall integration of architectural works to meet deadlines. 2) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project 3) Assist in proposal presentation, findings and preparation of reports to clients. 4) Assist in preparation of project specifications. 5) Assist in budget preparation and cost estimation. 6) Assist in recruitment, placement, and evaluation process of architecture staff. 7) Assist in plan or monitor the work progress for installation and testing. 8) Assist to inspect or review project deliverables to monitor compliance with requirement. 	<u>Assistant Architect</u> <ol style="list-style-type: none"> 1) Assist to manage the coordination and overall integration of architectural works to meet deadlines. 2) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project 3) Assist in proposal presentation, findings and preparation of reports to clients. 4) Assist in preparation of project specifications. 5) Assist in budget preparation and cost estimation. 6) Assist in recruitment, placement, and evaluation process of architecture staff. 7) Assist in plan or monitor the work progress for installation and testing. 8) Assist to inspect or review project deliverables to monitor compliance with requirement.

AREA	Architectural Works (Staircase Construction)	Architectural Works (Window Installation)	Architectural Works (Door Installation)
	9) Assist to develop or implement quality control and environmental protection programme. 10) Comply with architectural guidelines and standards.	9) Assist to develop or implement quality control and environmental protection programme. 10) Comply with architectural guidelines and standards.	9) Assist to develop or implement quality control and environmental protection programme. 10) Comply with architectural guidelines and standards.
LEVEL 3	<u>Supervisor</u> 1) Troubleshoot and rectify problem within work scope. 2) Conduct site safety and induction briefing. 3) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 4) Coordinate work activities 5) Monitor usage of equipment or construction sites to verify safety and specification are met. 6) Order or request materials. 7) Supervise subordinate work. 8) Arrange and perform maintenance activities.	<u>Supervisor</u> 1) Troubleshoot and rectify problem within work scope. 2) Conduct site safety and induction briefing. 3) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 4) Coordinate work activities 5) Monitor usage of equipment or construction sites to verify safety and specification are met. 6) Order or request materials. 7) Supervise subordinate work. 8) Arrange and perform maintenance activities.	<u>Supervisor</u> 1) Troubleshoot and rectify problem within work scope. 2) Conduct site safety and induction briefing. 3) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 4) Coordinate work activities 5) Monitor usage of equipment or construction sites to verify safety and specification are met. 6) Order or request materials. 7) Supervise subordinate work. 8) Arrange and perform maintenance activities.

AREA	Architectural Works (Staircase Construction)	Architectural Works (Window Installation)	Architectural Works (Door Installation)
	9) Conduct training for installation works, operation of machinery and equipment, site safety requirement. 10) Prepare reports for architectural works.	9) Conduct training for installation works, operation of machinery and equipment, site safety requirement. 10) Prepare reports for architectural works.	9) Conduct training for installation works, operation of machinery and equipment, site safety requirement. 10) Prepare reports for architectural works.
LEVEL 2	<u>Installer</u> 1) Read construction/shop drawing or other specifications to determine methods of installation and tool requirements. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Operate tools, equipment and machinery 4) Carry out assembling or installation architectural work according to instruction and drawing. 5) Perform inspections and testing work. 6) Comply with architectural guidelines and standards. 7) Liase with supervisor to carry out architectural work. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	<u>Installer</u> 1) Read construction/shop drawing or other specifications to determine methods of installation and tool requirements. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Operate tools, equipment and machinery 4) Carry out assembling or installation architectural work according to instruction and drawing. 5) Perform inspections and testing work. 6) Comply with architectural guidelines and standards. 7) Liase with supervisor to carry out architectural work. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	<u>Installer</u> 1) Read construction/shop drawing or other specifications to determine methods of installation and tool requirements. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Operate tools, equipment and machinery 4) Carry out assembling or installation architectural work according to instruction and drawing. 5) Perform inspections and testing work. 6) Comply with architectural guidelines and standards. 7) Liase with supervisor to carry out architectural work. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.

AREA	Architectural Works (Staircase Construction)	Architectural Works (Window Installation)	Architectural Works (Door Installation)
LEVEL 1	<u>General Worker</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety health and environment regulation. 	<u>General Worker</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety health and environment regulation. 	<u>General Worker</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety health and environment regulation.

Table 4.45: List of Occupational Responsibilities for Group 433 based on Table 4.20 and Table 4.21 (3 of 4)

AREA	Architectural Works (Furniture Installation)	Architectural Works (Damp & Water Proofing)	Architectural Works (Painting Work)
LEVEL 8	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function.

AREA	Architectural Works (Furniture Installation)	Architectural Works (Damp & Water Proofing)	Architectural Works (Painting Work)
	<ul style="list-style-type: none"> 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client 5) Verify project documentation such as diagram, masterplan, overall work program. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental 	<ul style="list-style-type: none"> 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client 5) Verify project documentation such as diagram, masterplan, overall work program. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental 	<ul style="list-style-type: none"> 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client 5) Verify project documentation such as diagram, masterplan, overall work program. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental

AREA	Architectural Works (Furniture Installation)	Architectural Works (Damp & Water Proofing)	Architectural Works (Painting Work)
	<p>officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>
LEVEL 6	<p><u>Construction Manager</u></p> <p>1) Attend and coordinate all architectural matter with various consultant and relevant authorities to meet deadlines.</p> <p>2) Review project costing and request budget estimates.</p> <p>3) Review and ensure architectural layout design in term of functionality, buildability, maintainability, cost efficient and sustainability aspect are complied.</p> <p>4) Interpret project brief to identify work sequence and appropriate construction method.</p> <p>5) Prepare work programme.</p> <p>6) Interpret method statement to determine and monitor execution of procedure/ work sequence for the project.</p>	<p><u>Construction Manager</u></p> <p>1) Attend and coordinate all architectural matter with various consultant and relevant authorities to meet deadlines.</p> <p>2) Review project costing and request budget estimates.</p> <p>3) Review and ensure architectural layout design in term of functionality, buildability, maintainability, cost efficient and sustainability aspect are complied.</p> <p>4) Interpret project brief to identify work sequence and appropriate construction method.</p> <p>5) Prepare work programme.</p> <p>6) Interpret method statement to determine and monitor execution of procedure/ work sequence for the project.</p>	<p><u>Construction Manager</u></p> <p>1) Attend and coordinate all architectural matter with various consultant and relevant authorities to meet deadlines.</p> <p>2) Review project costing and request budget estimates.</p> <p>3) Review and ensure architectural layout design in term of functionality, buildability, maintainability, cost efficient and sustainability aspect are complied.</p> <p>4) Interpret project brief to identify work sequence and appropriate construction method.</p> <p>5) Prepare work programme.</p> <p>6) Interpret method statement to determine and monitor execution of procedure/ work sequence for the project.</p>

AREA	Architectural Works (Furniture Installation)	Architectural Works (Damp & Water Proofing)	Architectural Works (Painting Work)
	7) Inspect or review project deliverables to monitor compliance with requirement. 8) Liase and coordinates with consultant for architectural submission and approval. 9) Liase with client, consultant, supplier, contractor, sub-contractor and all relevant parties for all architectural works. 10) Participate in construction management process for smooth progress of architectural works.	7) Inspect or review project deliverables to monitor compliance with requirement. 8) Liase and coordinates with consultant for architectural submission and approval. 9) Liase with client, consultant, supplier, contractor, sub-contractor and all relevant parties for all architectural works. 10) Participate in construction management process for smooth progress of architectural works.	7) Inspect or review project deliverables to monitor compliance with requirement. 8) Liase and coordinates with consultant for architectural submission and approval. 9) Liase with client, consultant, supplier, contractor, sub-contractor and all relevant parties for all architectural works. 10) Participate in construction management process for smooth progress of architectural works.
LEVEL 5	<u>Architect</u> 1) Manage the coordination and overall integration of architectural works to meet deadlines. 2) Review and propose for design changes. 3) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 4) Consult management, production on project specifications or procedures. 5) Proposal presentation, findings and preparation of reports to clients. 6) Prepare of project specifications. 7) Prepare budget preparation and cost estimation.	<u>Architect</u> 1) Manage the coordination and overall integration of architectural works to meet deadlines. 2) Review and propose for design changes. 3) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 4) Consult management, production on project specifications or procedures. 5) Proposal presentation, findings and preparation of reports to clients. 6) Prepare of project specifications. 7) Prepare budget preparation and cost estimation.	<u>Architect</u> 1) Manage the coordination and overall integration of architectural works to meet deadlines. 2) Review and propose for design changes. 3) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 4) Consult management, production on project specifications or procedures. 5) Proposal presentation, findings and preparation of reports to clients. 6) Prepare of project specifications. 7) Prepare budget preparation and cost estimation.

AREA	Architectural Works (Furniture Installation)	Architectural Works (Damp & Water Proofing)	Architectural Works (Painting Work)
	8) Conduct the recruitment, placement, and evaluation process of architecture staff. 9) Plan or monitor the work progress for installation and testing. 10) Inspect or review project deliverables to monitor compliance with requirement. 11) Develop or implement quality control and environmental protection programme. 12) Perform general administrative functions.	8) Conduct the recruitment, placement, and evaluation process of architecture staff. 9) Plan or monitor the work progress for installation and testing. 10) Inspect or review project deliverables to monitor compliance with requirement. 11) Develop or implement quality control and environmental protection programme. 12) Perform general administrative functions.	8) Conduct the recruitment, placement, and evaluation process of architecture staff. 9) Plan or monitor the work progress for installation and testing. 10) Inspect or review project deliverables to monitor compliance with requirement. 11) Develop or implement quality control and environmental protection programme. 12) Perform general administrative functions.
LEVEL 4	<u>Assistant Architect</u> 1) Assist to manage the coordination and overall integration of architectural works to meet deadlines. 2) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project 3) Assist in proposal presentation, findings and preparation of reports to clients. 4) Assist in preparation of project specifications. 5) Assist in budget preparation and cost estimation. 6) Assist in recruitment, placement, and evaluation process of architecture staff.	<u>Assistant Architect</u> 1) Assist to manage the coordination and overall integration of architectural works to meet deadlines. 2) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project 3) Assist in proposal presentation, findings and preparation of reports to clients. 4) Assist in preparation of project specifications. 5) Assist in budget preparation and cost estimation. 6) Assist in recruitment, placement, and evaluation process of architecture staff.	<u>Assistant Architect</u> 1) Assist to manage the coordination and overall integration of architectural works to meet deadlines. 2) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project 3) Assist in proposal presentation, findings and preparation of reports to clients. 4) Assist in preparation of project specifications. 5) Assist in budget preparation and cost estimation. 6) Assist in recruitment, placement, and evaluation process of architecture staff.

AREA	Architectural Works (Furniture Installation)	Architectural Works (Damp & Water Proofing)	Architectural Works (Painting Work)
	7) Assist in plan or monitor the work progress for installation and testing. 8) Assist to inspect or review project deliverables to monitor compliance with requirement. 9) Assist to develop or implement quality control and environmental protection programme. 10) Comply with architectural guidelines and standards.	7) Assist in plan or monitor the work progress for installation and testing. 8) Assist to inspect or review project deliverables to monitor compliance with requirement. 9) Assist to develop or implement quality control and environmental protection programme. 10) Comply with architectural guidelines and standards.	7) Assist in plan or monitor the work progress for installation and testing. 8) Assist to inspect or review project deliverables to monitor compliance with requirement. 9) Assist to develop or implement quality control and environmental protection programme. 10) Comply with architectural guidelines and standards.
LEVEL 3	<u>Supervisor</u> 1) Troubleshoot and rectify problem within work scope. 2) Conduct site safety and induction briefing 3) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 4) Coordinate work activities. 5) Monitor usage of equipment or construction sites to verify safety and specification are met. 6) Order or request materials. 7) Supervise subordinate work.	<u>Supervisor</u> 1) Troubleshoot and rectify problem within work scope. 2) Conduct site safety and induction briefing 3) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 4) Coordinate work activities. 5) Monitor usage of equipment or construction sites to verify safety and specification are met. 6) Order or request materials. 7) Supervise subordinate work.	<u>Supervisor</u> 1) Troubleshoot and rectify problem within work scope. 2) Conduct site safety and induction briefing 3) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 4) Coordinate work activities. 5) Monitor usage of equipment or construction sites to verify safety and specification are met. 6) Order or request materials. 7) Supervise subordinate work.

AREA	Architectural Works (Furniture Installation)	Architectural Works (Damp & Water Proofing)	Architectural Works (Painting Work)
	8) Arrange and perform maintenance activities. 9) Conduct training for installation works, operation of machinery and equipment, site safety requirement. 10) Prepare reports for architectural works.	8) Arrange and perform maintenance activities. 9) Conduct training for installation works, operation of machinery and equipment, site safety requirement. 10) Prepare reports for architectural works.	8) Arrange and perform maintenance activities. 9) Conduct training for installation works, operation of machinery and equipment, site safety requirement. 10) Prepare reports for architectural works.
LEVEL 2	<u>Carpenter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Operate tools, equipment and machinery 4) Carry out assembling or installation of formwork structures, scaffolding or fixtures according to instruction and drawing. 5) Check trueness of structure according to construction/shop drawing. 6) Coordinate work with other trades in order to smoothen and expedite work progress. 7) Comply with architectural guidelines and standards.	<u>Installer</u> 1) Read construction/shop drawing or other specifications to determine methods of installation and tool requirements. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Operate tools, equipment and machinery 4) Carry out assembling or installation architectural work according to instruction and drawing. 5) Perform inspections and testing work. 6) Comply with architectural guidelines and standards. 7) Liase with supervisor to carry out architectural work. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	<u>Painter</u> 1) Read work orders or receive instructions from supervisors or homeowners to determine work requirements. 2) Calculate amount of materials and time required based on surface measurements or work orders. 3) Erect scaffolding or set up ladders, to work above ground level. 4) Operate tools, equipment and machinery 5) Prepare painting receiving surface including checking of moisture content. 6) Apply protective coverings to protect surfaces during painting. 7) Mix and match colours of paint, stain, or varnish with oil or thinning and drying additives to obtain desired colours and consistencies.

AREA	Architectural Works (Furniture Installation)	Architectural Works (Damp & Water Proofing)	Architectural Works (Painting Work)
	8) Liase with supervisor to carry out architectural work. 9) Perform housekeeping. 10) Adhere to safety, health and environment regulation.		8) Apply primers or sealers to prepare new surfaces. 9) Paint prepared surfaces as required. 10) Comply with architectural guidelines and standards. 11) Liase with supervisor to carry out architectural work. 12) Perform housekeeping. 13) Adhere to safety, health and environment regulation.
LEVEL 1	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety health and environment regulation.	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety health and environment regulation.	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping 8) Adhere to safety health and environment regulation.

Table 4.46: List of Occupational Responsibilities for Group 433 based on Table 4.21 (4 of 4)

AREA	Architectural Works (Plastering Works)	Architectural Works (Anti Termite)
LEVEL 8	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme.

AREA	Architectural Works (Plastering Works)	Architectural Works (Anti Termite)
	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk. 	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate program or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk.
LEVEL 6	<p><u>Construction Manager</u></p> <ul style="list-style-type: none"> 1) Attend and coordinate all architectural matter with various consultant and relevant authorities to meet deadlines. 2) Review project costing and request budget estimates. 3) Review and ensure architectural layout design in term of functionality, buildability, maintainability, cost efficient and sustainability aspect are complied. 	<p><u>Construction Manager</u></p> <ul style="list-style-type: none"> 1) Attend and coordinate all architectural matter with various consultant and relevant authorities to meet deadlines. 2) Review project costing and request budget estimates. 3) Review and ensure architectural layout design in term of functionality, buildability, maintainability, cost efficient and sustainability aspect are complied.

AREA	Architectural Works (Plastering Works)	Architectural Works (Anti Termite)
	<ul style="list-style-type: none"> 4) Interpret project brief to identify work sequence and appropriate construction method. 5) Prepare work programme. 6) Interpret method statement to determine and monitor execution of procedure/ work sequence for the project. 7) Inspect or review project deliverables to monitor compliance with requirement. 8) Liase and coordinates with consultant for architectural submission and approval. 9) Liase with client, consultant, supplier, contractor, sub-contractor and all relevant parties for all architectural works. 10) Participate in construction management process for smooth progress of architectural works. 	<ul style="list-style-type: none"> 4) Interpret project brief to identify work sequence and appropriate construction method. 5) Prepare work programme. 6) Interpret method statement to determine and monitor execution of procedure/ work sequence for the project. 7) Inspect or review project deliverables to monitor compliance with requirement. 8) Liase and coordinates with consultant for architectural submission and approval. 9) Liase with client, consultant, supplier, contractor, sub-contractor and all relevant parties for all architectural works. 10) Participate in construction management process for smooth progress of architectural works.
LEVEL 5	<p><u>Architect</u></p> <ul style="list-style-type: none"> 1) Manage the coordination and overall integration of architectural works to meet deadlines. 2) Review and propose for design changes. 3) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 4) Consult management, production on project specifications or procedures. 5) Proposal presentation, findings and preparation of reports to clients. 	<p><u>Architect</u></p> <ul style="list-style-type: none"> 1) Manage the coordination and overall integration of architectural works to meet deadlines. 2) Review and propose for design changes. 3) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 4) Consult management, production on project specifications or procedures. 5) Proposal presentation, findings and preparation of reports to clients.

AREA	Architectural Works (Plastering Works)	Architectural Works (Anti Termite)
	6) Prepare of project specifications. 7) Prepare budget preparation and cost estimation. 8) Conduct the recruitment, placement, and evaluation process of architecture staff. 9) Plan or monitor the work progress for installation and testing. 10) Inspect or review project deliverables to monitor compliance with requirement. 11) Develop or implement quality control and environmental protection programme. 12) Perform general administrative functions.	6) Prepare of project specifications. 7) Prepare budget preparation and cost estimation. 8) Conduct the recruitment, placement, and evaluation process of architecture staff. 9) Plan or monitor the work progress for installation and testing. 10) Inspect or review project deliverables to monitor compliance with requirement. 11) Develop or implement quality control and environmental protection programme. 12) Perform general administrative functions.
LEVEL 4	<u>Assistant Architect</u> 1) Assist to manage the coordination and overall integration of architectural works to meet deadlines. 2) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 3) Assist in preparation of project specifications. 4) Assist in budget preparation and cost estimation. 5) Assist in recruitment, placement, and evaluation process of architecture staff. 6) Assist in monitor the work progress for installation and testing. 7) Assist to inspect project deliverables compliance with requirement.	<u>Assistant Architect</u> 1) Assist to manage the coordination and overall integration of architectural works to meet deadlines. 2) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project . 3) Assist in preparation of project specifications. 4) Assist in budget preparation and cost estimation. 5) Assist in recruitment, placement, and evaluation process of architecture staff. 6) Assist in monitor the work progress for installation and testing. 7) Assist to inspect project deliverables compliance with requirement.

AREA	Architectural Works (Plastering Works)	Architectural Works (Anti Termite)
	8) Assist to develop or implement quality control and environmental protection programme. 9) Comply with architectural guidelines and standards.	8) Assist to develop quality control and environmental protection programme. 9) Comply with architectural guidelines and standards.
LEVEL 3	<u>Supervisor</u> 1) Troubleshoot and rectify problem within work scope. 2) Conduct site safety and induction briefing. 3) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement 4) Coordinate work activities. 5) Monitor usage of equipment or construction sites to verify safety and specification are met. 6) Order or request materials. 7) Supervise subordinate work. 8) Arrange and perform maintenance activities. 9) Conduct training for installation works, operation of machinery and equipment, site safety requirement. 10) Prepare reports for architectural works.	<u>Supervisor</u> 1) Troubleshoot and rectify problem within work scope. 2) Conduct site safety and induction briefing. 3) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement 4) Coordinate work activities. 5) Monitor usage of equipment or construction sites to verify safety and specification are met. 6) Order or request materials. 7) Supervise subordinate work. 8) Arrange and perform maintenance activities. 9) Conduct training for installation works, operation of machinery and equipment, site safety requirement. 10) Prepare reports for architectural works.
LEVEL 2	<u>Plasterer</u> 1) Read work orders or receive instructions from supervisors or homeowners to determine work requirements. 2) Calculate amount of materials and time required based on surface measurements or work orders.	<u>Applicator</u> 1) Read work orders or receive instructions from supervisors or homeowners to determine work requirements.

AREA	Architectural Works (Plastering Works)	Architectural Works (Anti Termite)
	3) Erect scaffolding or set up ladders, to work above ground level. 4) Operate tools, equipment and machinery. 5) Apply protective coverings to protect surfaces during plastering. 6) Fill cracks or breaks in surfaces of plaster articles or areas to prepare new surfaces. 7) Mix plaster according to specified content ratio. 8) Plaster prepared surfaces as required. 9) Comply with architectural guidelines and standards. 10) Liase with supervisor to carry out architectural work. 11) Perform housekeeping. 12) Adhere to safety, health and environment regulation.	2) Inspect premises to identify infestation source and extent of damage to property, wall, or roof porosity and access to infested locations. 3) Clean work site after completion of job. 4) assist other workers in treatment or extermination processes to eliminate or control rodents, insects, or weeds. 5) Operate tools, equipment and machinery. 6) Prepare area/surfaces as required for treatment. 7) Liase with supervisor to carry out anti-termite work. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.
LEVEL 1	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety, health and environment regulation.

Table 4.47: List of Occupational Responsibilities for Group 439 based on Table 4.22 (1 of 8)

AREA	Specialized Machinaries	Piling Work	Pile Testing
LEVEL 8	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	Not Available
LEVEL 7	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	Not Available

AREA	Specialized Machinaries	Piling Work	Pile Testing
	<ul style="list-style-type: none"> 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental 	<ul style="list-style-type: none"> 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental 	

AREA	Specialized Machinaries	Piling Work	Pile Testing
	<p>officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	
LEVEL 6	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p> <p>6) Liase and coordinates with consultant for M&E submission and approval.</p>	<p><u>Construction/Site Manager</u></p> <p>1) Manage project cost to stay within project limits.</p> <p>2) Develop scope of work and project function.</p> <p>3) Provide overall project status report to project team management and client.</p> <p>4) Update project progress or status to top management.</p> <p>5) Prepare project documentation such as diagram, masterplan, overall work program.</p> <p>6) Review design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p>	Not Available

AREA	Specialized Machinaries	Piling Work	Pile Testing
	<ul style="list-style-type: none"> 7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue. 8) Participate in construction management process for smooth progress of M&E works. 	<ul style="list-style-type: none"> 7) Prepare request for information (RFI) to clarify uncertainties. 8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation. 9) Communicate with consultant for project progress and matters arising. 10) Coordinate with safety, health and environmental officer to ensure compliance with regulation. 11) Liaise with project manager to meet project objectives and scopes of work within budget allocated. 12) Execute risk management activities to minimize project risk. 13) Delegate and assign task to subordinate. 	
LEVEL 5	<p><u>Mechanical Engineer</u></p> <ul style="list-style-type: none"> 1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks. 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 	<p><u>Site Engineer</u></p> <ul style="list-style-type: none"> 1) Plan, schedule, or coordinate piling work activities to meet deadlines. 2) Prepare project costing and request budget estimates. 3) Inspect or review project deliverables to monitor compliance with requirement 4) Monitor work progress. 	<p><u>QA/QC Engineer</u></p> <ul style="list-style-type: none"> 1) Plan routine and non-routine soil testing and analysis. 2) Analyse test results and compare to establish specification and control limits. 3) Verify laboratory test data. 4) Verify equipment calibration data. 5) Provide quality control data for regulatory submission.

AREA	Specialized Machinaries	Piling Work	Pile Testing
	<ul style="list-style-type: none"> 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 6) Compile data and write reports regarding existing or potential electrical engineering studies or projects. 7) Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 8) Prepare specifications for purchases of materials or equipment. 9) Estimate labour, material, or construction costs for budget preparation purposes. 	<ul style="list-style-type: none"> 5) Plan and organize construction maintenance activities. 6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work program/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection program. 	<ul style="list-style-type: none"> 6) Investigate or report irregularity on test result. 7) Identify problem and recommend solution. 8) Verify laboratory condition according to equipment manual. 9) Monitor testing procedure for all test performed according to specification, standard and test procedure. 10) Review data to ensure accuracy and adherence to regulatory compliance. 11) Liaise between QC and other departments, vendor or contractor. 12) Recommend corrective action based on non-conformance report.

AREA	Specialized Machinaries	Piling Work	Pile Testing
	<ul style="list-style-type: none"> 10) Supervise or train project team members, as necessary. 11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 12) Investigate customer or public complaints to determine the nature and extent of problems. 13) Oversee project production efforts to assure projects are completed on time and within budget. 14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards. 15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects. 16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting. 17) Plan layout of electric power generating plants or distribution lines or stations. 		

AREA	Specialized Machinaries	Piling Work	Pile Testing
	18) Assist in developing capital project programs for new equipment or major repairs.		
LEVEL 4	<u>Assistant Mechanical Engineer</u> <ol style="list-style-type: none"> 1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 	<u>Assistant Site Engineer</u> <ol style="list-style-type: none"> 1) Assist to plan, schedule, or coordinate piling work activities to meet deadlines. 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work program/project milestone. 9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 	<u>Assistant QA/QC Engineer</u> <ol style="list-style-type: none"> 1) Coordinate sampling activities. 2) Prepare sample for routine and non-routine analysis. 3) Prepare documentation for test results according to requirement. 4) Perform all testing according to specification, standard and test procedure 5) Assist in equipment calibration process. 6) Complete documentation to support testing procedure. 7) Liase with third party laboratory tester/operator. 8) Compile laboratory test data for report preparation. 9) Review data to ensure accuracy and adherence to regulatory compliance. 10) Propose for the next course of action. 11) Raise non-conformance based on test results reviewed.

AREA	Specialized Machinaries	Piling Work	Pile Testing
	7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	10) Assist to develop or implement quality control and environmental protection programme.	
LEVEL 3	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope. 8) Carry out regular work inspections. 9) Supervise subordinate work. 10) Monitor usage of equipment or construction sites to verify safety and specification are met.	<u>Site Supervisor</u> 1) Prepare daily work schedule, coordinate and supervise for piling work activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report.	<u>QA/QC Supervisor</u> 1) Prepare daily work schedule, coordinate and supervise for soil testing works. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret soil testing document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report.

AREA	Specialized Machinaries	Piling Work	Pile Testing
	11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety, health and environment regulation.	11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within work scope. 17) Prepare reports for piling work activities.	11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within work scope. 17) Prepare reports for pile testing works activities.
LEVEL 2	<u>Machine Operator</u> 1) Operate tools, equipment and machinery. 2) Carry out construction works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform housekeeping. 6) Adhere to safety, health and environment regulation.	<u>Machinery Operator</u> 1) Operate tools, equipment and machinery. 2) Carry out soil testing works according to procedure and specification. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform housekeeping. 6) Adhere to safety, health and environment regulation.	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out soil testing works according to procedure and specification. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform housekeeping. 6) Adhere to safety, health and environment regulation.

AREA	Specialized Machinaries	Piling Work	Pile Testing
LEVEL 1	<u>General Worker</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Control the flow of traffic passing near, in or around work site. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation. 	<u>General Worker</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Control the flow of traffic passing near, in or around work site. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation. 	<u>General Worker</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Control the flow of traffic passing near, in or around work site. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.

Table 4.48: List of Occupational Responsibilities for Group 439 based on Table 4.22 and Table 4.23 (2 of 8)

AREA	Steel/Aluminium Formwork	Scaffolding	Steam Cleaning
LEVEL 8	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function.

AREA	Steel/Aluminium Formwork	Scaffolding	Steam Cleaning
	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>

AREA	Steel/Aluminium Formwork	Scaffolding	Steam Cleaning
	<p>with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>
LEVEL 6	<p><u>Construction/Site Manager</u></p> <p>1) Manage project cost to stay within project limits.</p> <p>2) Develop scope of work and project function.</p> <p>3) Provide overall project status report to project team management and client.</p> <p>4) Update project progress or status to top management</p> <p>5) Prepare project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Review design, engineering or construction technical documentation to ensure compliance with regulation</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p>

AREA	Steel/Aluminium Formwork	Scaffolding	Steam Cleaning
	<p>industrial code and standard, and client requirement.</p> <p>7) Prepare request for information (RFI) to clarify uncertainties.</p> <p>8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation.</p> <p>9) Communicate with consultant for project progress and matters arising.</p> <p>10) Coordinate with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11) Liase with project manager to meet project objectives and scopes of work within budget allocated.</p> <p>12) Execute risk management activities to minimize project risk.</p> <p>13) Delegate and assign task to subordinate.</p>	<p>6) Liase and coordinates with consultant for M&E submission and approval.</p> <p>7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue.</p> <p>8) Participate in construction management process for smooth progress of M&E works.</p>	<p>6) Liase and coordinates with consultant for M&E submission and approval.</p> <p>7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue.</p> <p>8) Participate in construction management process for smooth progress of M&E works.</p>
LEVEL 5	<p><u>Site Engineer</u></p> <p>1) Plan, schedule, or coordinate formwork activities to meet deadlines.</p>	<p><u>Mechanical Engineer</u></p> <p>1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks.</p>	<p><u>Mechanical Engineer</u></p> <p>1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks.</p>

AREA	Steel/Aluminium Formwork	Scaffolding	Steam Cleaning
	<ul style="list-style-type: none"> 2) Prepare project costing and request budget estimates. 3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress. 5) Plan and organize construction maintenance activities. 6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work programme/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme. 	<ul style="list-style-type: none"> 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 6) Compile data and write reports regarding existing or potential electrical engineering studies or projects. 7) Perform detailed calculations to compute and establish manufacturing, 	<ul style="list-style-type: none"> 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 6) Compile data and write reports regarding existing or potential electrical engineering studies or projects. 7) Perform detailed calculations to compute and establish manufacturing,

AREA	Steel/Aluminium Formwork	Scaffolding	Steam Cleaning
		<p>construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p>	<p>construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p>

AREA	Steel/Aluminium Formwork	Scaffolding	Steam Cleaning
		<p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programmes for new equipment or major repairs.</p>	<p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programmes for new equipment or major repairs.</p>
LEVEL 4	<p><u>Assistant Site Engineer</u></p> <p>1) Assist to plan, schedule, or coordinate formwork activities to meet deadlines.</p> <p>2) Assist to prepare project costing and request budget estimates.</p> <p>3) Assist to inspect or review project deliverables to monitor compliance with requirement.</p> <p>4) Assist to monitor work progress.</p> <p>5) Assist to plan and organize construction maintenance activities.</p>	<p><u>Assistant Mechanical Engineer</u></p> <p>1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements.</p> <p>2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.</p>	<p><u>Assistant Mechanical Engineer</u></p> <p>1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements.</p> <p>2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.</p>

AREA	Steel/Aluminium Formwork	Scaffolding	Steam Cleaning
	6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 10) Assist to develop or implement quality control and environmental protection programme.	3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.	3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems.
LEVEL 3	<u>Site Supervisor</u> 1) Prepare daily work schedule, coordinate and supervise for formwork activities. 2) Conduct site safety and induction briefing.	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction	<u>Mechanical Supervisor</u> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction

AREA	Steel/Aluminium Formwork	Scaffolding	Steam Cleaning
	<ul style="list-style-type: none"> 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities 6) monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement 16) Troubleshoot and rectify within work scope. 	<ul style="list-style-type: none"> drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope . 8) Carry out regular work inspections. 9) Supervise subordinate work. 10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 	<ul style="list-style-type: none"> drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope. 8) Carry out regular work inspections. 9) Supervise subordinate work. 10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal. 14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works.

AREA	Steel/Aluminium Formwork	Scaffolding	Steam Cleaning
	17) Prepare reports for formwork activities.	17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety health and environment regulation.	17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety health and environment regulation.
LEVEL 2	<u>Formwork Installer</u> <ol style="list-style-type: none"> 1) Interpret specifications in construction/ shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Operate tools, equipment and machinery 4) Carry out assembling or installation of formwork structures, scaffolding or fixtures according to instruction and drawing. 5) Check trueness of structure according to construction/shop drawing. 6) Coordinate work with other trades in order to smoothen and expedite work progress. 7) Comply with architectural/structural guidelines and standards. 	<u>Technician</u> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing. 7) Record electrical data. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation. 	<u>Technician</u> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Check air-conditioning and refrigeration system. 6) Perform air-conditioning and refrigeration system for testing. 7) Record electrical data. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.

AREA	Steel/Aluminium Formwork	Scaffolding	Steam Cleaning
	8) Liase with supervisor to carry out architectural/structural work. 9) Perform housekeeping. 10) Adhere to safety, health and environment regulation.		
LEVEL 1	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform Housekeeping. 8) Adhere to safety health and environment regulation.	<u>Mechanical Fitter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Hack surface and install piping for air-conditioning and refrigeration system. 6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction.	<u>Mechanical Fitter</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Prepare and operate tools, equipment and machinery. 4) Prepare materials. 5) Hack surface and install piping for air-conditioning and refrigeration system. 6) Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system. 7) Prepare air-conditioning and refrigeration system for testing. 8) Assist site works according to instruction.

AREA	Steel/Aluminium Formwork	Scaffolding	Steam Cleaning
		9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety health and environment regulation.	9) Assist routine maintenance in accordance to routine schedule. 10) Assist in materials loading and unloading activities. 11) Assist to measure, mark or record measurements. 12) Perform housekeeping. 13) Adhere to safety health and environment regulation.

Table 4.49: List of Occupational Responsibilities for Group 439 based on Table 4.23 and Table 4.24 (3 of 8)

AREA	Sand Blasting	Chimneys and Industrial Oven	Non-Electrical Solar Energy Collector
LEVEL 8	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function.

AREA	Sand Blasting	Chimneys and Industrial Oven	Non-Electrical Solar Energy Collector
	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liase and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liase and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liase and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>

AREA	Sand Blasting	Chimneys and Industrial Oven	Non-Electrical Solar Energy Collector
	<p>with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>
LEVEL 6	<p><u>Construction/Site Manager</u></p> <p>1) Manage project cost to stay within project limits.</p> <p>2) Develop scope of work and project function.</p> <p>3) Provide overall project status report to project team management and client.</p> <p>4) Update project progress or status to top management.</p> <p>5) Prepare project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Review design, engineering or construction technical documentation to ensure compliance with regulation</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p>	<p><u>M&E Manager</u></p> <p>1) Attend and coordinate all M&E matter with various consultant and relevant authorities.</p> <p>2) Review and ensure M&E layout design in term of functionality buildability maintainability cost efficient and sustainability aspect are complied.</p> <p>3) Implement M&E best practice project.</p> <p>4) Lead standardisation of M&E design across various asset classes.</p> <p>5) Implement cost management to ensure M&E design is efficient and meets project requirement.</p>

AREA	Sand Blasting	Chimneys and Industrial Oven	Non-Electrical Solar Energy Collector
	<p>industrial code and standard, and client requirement.</p> <p>7) Prepare request for information (RFI) to clarify uncertainties.</p> <p>8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation.</p> <p>9) Communicate with consultant for project progress and matters arising.</p> <p>10) Coordinate with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11) Liase with project manager to meet project objectives and scopes of work within budget allocated.</p> <p>12) Execute risk management activities to minimize project risk.</p> <p>13) Delegate and assign task to subordinate.</p>	<p>6) Liase and coordinates with consultant for M&E submission and approval.</p> <p>7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue.</p> <p>8) Participate in construction management process for smooth progress of M&E works.</p>	<p>6) Liase and coordinates with consultant for M&E submission and approval.</p> <p>7) Facilitate discussion between consultant and contractor on site to resolve M&E design and construction issue.</p> <p>8) Participate in construction management process for smooth progress of M&E works.</p>
LEVEL 5	<p><u>Site Engineer</u></p> <p>1) Plan, schedule, or coordinate sand blasting activities to meet deadlines.</p> <p>2) Prepare project costing and request budget estimates.</p>	<p><u>Mechanical Engineer</u></p> <p>1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks.</p>	<p><u>Electrical Engineer</u></p> <p>1) Operate computer-assisted engineering or design software or equipment to perform engineering tasks.</p>

AREA	Sand Blasting	Chimneys and Industrial Oven	Non-Electrical Solar Energy Collector
	<ul style="list-style-type: none"> 3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress. 5) Plan and organize construction maintenance activities. 6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work programme/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme. 	<ul style="list-style-type: none"> 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 6) Compile data and write reports regarding existing or potential electrical engineering studies or projects. 7) Perform detailed calculations to compute and establish manufacturing, 	<ul style="list-style-type: none"> 2) Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements. 3) Consult engineers, customers, or others to discuss existing or potential engineering projects or products. 4) Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 5) Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 6) Compile data and write reports regarding existing or potential electrical engineering studies or projects. 7) Perform detailed calculations to compute and establish manufacturing,

AREA	Sand Blasting	Chimneys and Industrial Oven	Non-Electrical Solar Energy Collector
		<p>construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p>	<p>construction, or installation standards or specifications.</p> <p>8) Prepare specifications for purchases of materials or equipment.</p> <p>9) Estimate labour, material, or construction costs for budget preparation purposes.</p> <p>10) Supervise or train project team members, as necessary.</p> <p>11) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>12) Investigate customer or public complaints to determine the nature and extent of problems.</p> <p>13) Oversee project production efforts to assure projects are completed on time and within budget.</p> <p>14) Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p>

AREA	Sand Blasting	Chimneys and Industrial Oven	Non-Electrical Solar Energy Collector
		<p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations.</p> <p>18) Assist in developing capital project programmes for new equipment or major repairs.</p>	<p>15) Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects.</p> <p>16) Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>17) Plan layout of electric power generating plants or distribution lines or stations</p> <p>18) Assist in developing capital project programmes for new equipment or major repairs.</p>
LEVEL 4	<p><u>Assistant Site Engineer</u></p> <p>1) Assist to plan, schedule, or coordinate sand blasting activities to meet deadlines.</p> <p>2) Assist to prepare project costing and request budget estimates.</p> <p>3) Assist to inspect or review project deliverables to monitor compliance with requirement.</p> <p>4) Assist to monitor work progress.</p> <p>5) Assist to plan and organize construction maintenance activities.</p>	<p><u>Assistant Mechanical Engineer</u></p> <p>1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements.</p> <p>2) Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes.</p>	<p><u>Assistant Electrical Engineer</u></p> <p>1) Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements.</p> <p>2) Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products.</p> <p>3) Assist to design, implement, maintain, or improve electrical instruments,</p>

AREA	Sand Blasting	Chimneys and Industrial Oven	Non-Electrical Solar Energy Collector
	<ul style="list-style-type: none"> 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project 8) Assist to prepare master work programme/ project milestone. 9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 10) Assist to develop or implement quality control and environmental protection programme. 	<ul style="list-style-type: none"> 3) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 4) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 5) Assist to prepare specifications for purchases of materials or equipment. 6) Assist to supervise or train project team members, as necessary. 7) Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems. 8) Identify and compile customer or public complaints to determine the nature and extent of problems. 	<ul style="list-style-type: none"> equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes. 4) Assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements. 5) Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects. 6) Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications. 7) Assist to prepare specifications for purchases of materials or equipment. 8) Assist to estimate labour, material, or construction costs for budget preparation purposes. 9) Assist to supervise or train project team members, as necessary.

AREA	Sand Blasting	Chimneys and Industrial Oven	Non-Electrical Solar Energy Collector
			<p>10) Assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems.</p> <p>11) Assist to investigate customer or public complaints to determine the nature and extent of problems.</p> <p>12) Assist to oversee project production efforts to assure projects are completed on time and within budget.</p> <p>13) Assist to inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards.</p> <p>14) Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting.</p> <p>15) Assist to plan layout of electric power generating plants or distribution lines or stations.</p>

AREA	Sand Blasting	Chimneys and Industrial Oven	Non-Electrical Solar Energy Collector
LEVEL 3	<u>Site Supervisor</u> <ol style="list-style-type: none"> 1) Prepare daily work schedule, coordinate and supervise for sand blasting activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal. 	<u>Mechanical Supervisor</u> <ol style="list-style-type: none"> 1) Conduct site safety and induction briefing. 2) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 3) Assign work to employees based on job. 4) Coordinate work activities. 5) Order or request materials. 6) Arrange and perform maintenance activities. 7) Troubleshoot and rectify mechanical problem within work scope . 8) Carry out regular work inspections. 9) Supervise subordinate work. 10) Monitor usage of equipment or construction sites to verify safety and specification are met. 11) Raise safety concerns and identify construction hazard and risk. 12) Attend site meetings. 13) Perform subordinate appraisal. 	<u>Electrical Supervisor</u> <ol style="list-style-type: none"> 1) Troubleshoot and rectify electrical problem within work scope. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange and perform maintenance activities.

AREA	Sand Blasting	Chimneys and Industrial Oven	Non-Electrical Solar Energy Collector
	15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within work scope. 17) Prepare reports for sand blasting activities.	14) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 15) Compile site document or record to prepare report. 16) Prepare reports for mechanical works. 17) Lead and manage team. 18) Perform housekeeping. 19) Adhere to safety health and environment regulation.	14) Perform subordinate appraisal. 15) Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement. 16) Prepare reports for electrical works. 17) Lead and manage wireman.
LEVEL 2	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out sand blasting works according to procedure and specification. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform housekeeping. 6) Adhere to safety, health and environment regulation.	<u>Installer</u> 1) Read construction/shop drawing or other specifications to determine methods of installation and tool requirements. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Operate tools, equipment and machinery. 4) Carry out assembling or installation architectural work according to instruction and drawing. 5) Perform inspections and testing work. 6) Comply with architectural guidelines and standards.	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out installation works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform electrical system testing or continuity circuits test. 6) Record electrical data. 7) Perform housekeeping.

AREA	Sand Blasting	Chimneys and Industrial Oven	Non-Electrical Solar Energy Collector
		7) Liase with supervisor to carry out architectural work. 8) Perform housekeeping. 9) Adhere to safety, health and environment regulation.	8) Adhere to safety, health and environment regulation.
LEVEL 1	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Control the flow of traffic passing near, in or around work site . 8) Perform housekeeping. 9) Adhere to safety health and environment regulation.	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety health and environment regulation.	<u>Wireman</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety health and environment regulation.

Table 4.50: List of Occupational Responsibilities for Group 439 based on Table 4.24 (4 of 8)

AREA	Swimming Pool Construction	Roof Construction
LEVEL 8	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme.

AREA	Swimming Pool Construction	Roof Construction
	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk. 	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk.
LEVEL 6	<p><u>Construction/Site Manager</u></p> <ul style="list-style-type: none"> 1) Manage project cost to stay within project limits. 2) Develop scope of work and project function. 3) Provide overall project status report to project team management and client. 4) Update project progress or status to top management. 5) Prepare project documentation such as diagram, masterplan, overall work programme. 	<p><u>Construction/Site Manager</u></p> <ul style="list-style-type: none"> 1) Manage project cost to stay within project limits. 2) Develop scope of work and project function. 3) Provide overall project status report to project team management and client. 4) Update project progress or status to top management. 5) Prepare project documentation such as diagram, masterplan, overall work programme.

AREA	Swimming Pool Construction	Roof Construction
	<ul style="list-style-type: none"> 6) Review design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Prepare request for information (RFI) to clarify uncertainties. 8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation 9) Communicate with consultant for project progress and matters arising. 10) Coordinate with safety, health and environmental officer to ensure compliance with regulation. 11) Liase with project manager to meet project objectives and scopes of work within budget allocated. 12) Execute risk management activities to minimize project risk. 13) Delegate and assign task to subordinate. 	<ul style="list-style-type: none"> 6) Review design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Prepare request for information (RFI) to clarify uncertainties. 8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation. 9) Communicate with consultant for project progress and matters arising. 10) Coordinate with safety, health and environmental officer to ensure compliance with regulation. 11) Liase with project manager to meet project objectives and scopes of work within budget allocated. 12) Execute risk management activities to minimize project risk. 13) Delegate and assign task to subordinate.
LEVEL 5	<p><u>Site Engineer</u></p> <ul style="list-style-type: none"> 1) Plan, schedule, or coordinate swimming pool construction activities to meet deadlines. 2) Prepare project costing and request budget estimates. 3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress. 5) Plan and organize construction maintenance activities. 	<p><u>Site Engineer</u></p> <ul style="list-style-type: none"> 1) Plan, schedule, or coordinate roof construction activities to meet deadlines. 2) Prepare project costing and request budget estimates. 3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress. 5) Plan and organize construction maintenance activities

AREA	Swimming Pool Construction	Roof Construction
	6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work programme/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme.	6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work programme/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme.
LEVEL 4	<u>Assistant Site Engineer</u> 1) Assist to plan, schedule, or coordinate swimming pool activities to meet deadlines. 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone.	<u>Assistant Site Engineer</u> 1) Assist to plan, schedule, or coordinate roof construction activities to meet deadlines. 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone.

AREA	Swimming Pool Construction	Roof Construction
	9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 10) Assist to develop or implement quality control and environmental protection programme.	9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 10) Assist to develop or implement quality control and environmental protection programme.
LEVEL 3	<u>Site Supervisor</u> 1) Prepare daily work schedule, coordinate and supervise for swimming pool construction activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement 5) Coordinate work activities. 6) monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal.	<u>Site Supervisor</u> 1) Prepare daily work schedule, coordinate and supervise for roof construction activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement 5) Coordinate work activities. 6) monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal.

AREA	Swimming Pool Construction	Roof Construction
	15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within work scope. 17) Prepare reports for swimming pool construction activities.	15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within work scope. 17) Prepare reports for roof construction activities.
LEVEL 2	<u>Installer</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Operate tools, equipment and machinery. 4) Erect scaffolding or set up ladders, to work above ground level. 5) Carry out assembling or installation of roofing structures, insulation or fixtures according to instruction and drawing. 6) Check trueness of roofing structures, insulation or fixtures assembled or installed according to construction/shop drawing. 7) Coordinate work with other trades in order to smoothen and expedite work progress. 8) Comply with architectural/structural guidelines and standards. 9) Liase with supervisor to carry out architectural/structural work. 10) Perform housekeeping. 11) Adhere to safety, health and environment regulation.	<u>Roof Installer</u> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Operate tools, equipment and machinery. 4) Erect scaffolding or set up ladders, to work above ground level. 5) Carry out assembling or installation of roofing structures, insulation or fixtures according to instruction and drawing. 6) Check trueness of roofing structures, insulation or fixtures assembled or installed according to construction/shop drawing. 7) Coordinate work with other trades in order to smoothen and expedite work progress. 8) Comply with architectural/structural guidelines and standards. 9) Liase with supervisor to carry out architectural/structural work. 10) Perform housekeeping. 11) Adhere to safety, health and environment regulation.

AREA	Swimming Pool Construction	Roof Construction
LEVEL 1	<u>General Worker</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety health and environment regulation. 	<u>General Worker</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety health and environment regulation.

Table 4.51: List of Occupational Responsibilities for Group 439 based on Table 4.25 (5 of 8)

AREA	External Works (Sub-soil Drainage)	External Works (Soak Away Pit)	External Works (Retention Pond)
LEVEL 8	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function.

AREA	External Works (Sub-soil Drainage)	External Works (Soak Away Pit)	External Works (Retention Pond)
	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>	<p>3) Verify overall project status report and present to project team management and client.</p> <p>4) Update project progress or status to top management and client.</p> <p>5) Verify project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement.</p> <p>7) Approve request for information (RFI) to clarify uncertainties.</p> <p>8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement.</p> <p>9) Liaise and negotiate with consultant for project progress deadline and matters arising.</p> <p>10) Initiate programme or instruct construction site manager to conform</p>

AREA	External Works (Sub-soil Drainage)	External Works (Soak Away Pit)	External Works (Retention Pond)
	<p>with safety, health and environmental officer to ensure compliance with regulation</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>with safety, health and environmental officer to ensure compliance with regulation</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>	<p>with safety, health and environmental officer to ensure compliance with regulation</p> <p>11)Lead project team to meet project objectives and scopes of work within budget allocated.</p> <p>12)Perform risk management activities to minimize project risk.</p>
LEVEL 6	<p><u>Construction/Site Manager</u></p> <p>1) Manage project cost to stay within project limits.</p> <p>2) Develop scope of work and project function.</p> <p>3) Provide overall project status report to project team management and client.</p> <p>4) Update project progress or status to top management.</p> <p>5) Prepare project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Review design, engineering or construction technical documentation to ensure compliance with regulation</p>	<p><u>Construction/Site Manager</u></p> <p>1) Manage project cost to stay within project limits.</p> <p>2) Develop scope of work and project function.</p> <p>3) Provide overall project status report to project team management and client.</p> <p>4) Update project progress or status to top management.</p> <p>5) Prepare project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Review design, engineering or construction technical documentation to ensure compliance with regulation</p>	<p><u>Construction/Site Manager</u></p> <p>1) Manage project cost to stay within project limits.</p> <p>2) Develop scope of work and project function.</p> <p>3) Provide overall project status report to project team management and client.</p> <p>4) Update project progress or status to top management.</p> <p>5) Prepare project documentation such as diagram, masterplan, overall work programme.</p> <p>6) Review design, engineering or construction technical documentation to ensure compliance with regulation</p>

AREA	External Works (Sub-soil Drainage)	External Works (Soak Away Pit)	External Works (Retention Pond)
	<p>industrial code and standard, and client requirement.</p> <p>7) Prepare request for information (RFI) to clarify uncertainties.</p> <p>8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation.</p> <p>9) Communicate with consultant for project progress and matters arising.</p> <p>10) Coordinate with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11) Liaise with project manager to meet project objectives and scopes of work within budget allocated.</p> <p>12) Execute risk management activities to minimize project risk.</p> <p>13) Delegate and assign task to subordinate.</p>	<p>industrial code and standard, and client requirement.</p> <p>7) Prepare request for information (RFI) to clarify uncertainties.</p> <p>8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation.</p> <p>9) Communicate with consultant for project progress and matters arising.</p> <p>10) Coordinate with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11) Liaise with project manager to meet project objectives and scopes of work within budget allocated.</p> <p>12) Execute risk management activities to minimize project risk.</p> <p>13) Delegate and assign task to subordinate.</p>	<p>industrial code and standard, and client requirement.</p> <p>7) Prepare request for information (RFI) to clarify uncertainties.</p> <p>8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation.</p> <p>9) Communicate with consultant for project progress and matters arising.</p> <p>10) Coordinate with safety, health and environmental officer to ensure compliance with regulation.</p> <p>11) Liaise with project manager to meet project objectives and scopes of work within budget allocated.</p> <p>12) Execute risk management activities to minimize project risk.</p> <p>13) Delegate and assign task to subordinate.</p>
LEVEL 5	<p><u>Site Engineer</u></p> <p>1) Plan, schedule, or coordinate sub-soil drainage activities to meet deadlines.</p> <p>2) Prepare project costing and request budget estimates.</p>	<p><u>Site Engineer</u></p> <p>1) Plan, schedule, or coordinate soak away pit activities to meet deadlines.</p> <p>2) Prepare project costing and request budget estimates.</p>	<p><u>Site Engineer</u></p> <p>1) Plan, schedule, or coordinate retention pond activities to meet deadlines.</p> <p>2) Prepare project costing and request budget estimates.</p>

AREA	External Works (Sub-soil Drainage)	External Works (Soak Away Pit)	External Works (Retention Pond)
	3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress. 5) Plan and organize construction maintenance activities. 6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work programme/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme.	3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress. 5) Plan and organize construction maintenance activities. 6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work programme/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme.	3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress. 5) Plan and organize construction maintenance activities. 6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work programme/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme.
LEVEL 4	<u>Assistant Site Engineer</u> 1) Assist to plan, schedule, or coordinate sub-soil sewerage activities to meet deadlines.	<u>Assistant Site Engineer</u> 1) Assist to plan, schedule, or coordinate soak away pit to meet deadlines. 2) Assist to prepare project costing and request budget estimates.	<u>Assistant Site Engineer</u> 1) Assist to plan, schedule, or coordinate retention pond to meet deadlines. 2) Assist to prepare project costing and request budget estimates.

AREA	External Works (Sub-soil Drainage)	External Works (Soak Away Pit)	External Works (Retention Pond)
	<ul style="list-style-type: none"> 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 	<ul style="list-style-type: none"> 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 	<ul style="list-style-type: none"> 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone.
LEVEL 3	<u>Site Supervisor</u> <ul style="list-style-type: none"> 1) Prepare daily work schedule, coordinate and supervise for sub-soil drainage activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job 	<u>Site Supervisor</u> <ul style="list-style-type: none"> 1) Prepare daily work schedule, coordinate and supervise for soak away pit activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 	<u>Site Supervisor</u> <ul style="list-style-type: none"> 1) Prepare daily work schedule, coordinate and supervise for retention pond activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job.

AREA	External Works (Sub-soil Drainage)	External Works (Soak Away Pit)	External Works (Retention Pond)
	<p>4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement.</p> <p>5) Coordinate work activities.</p> <p>6) monitor usage of equipment or construction sites to verify safety and specification are met.</p> <p>7) Carry out regular work inspections.</p> <p>8) Order or request materials.</p> <p>9) Attend site meetings.</p> <p>10) Compile site document or record to prepare report.</p> <p>11) Raise safety concerns and identify construction hazard and risk.</p> <p>12) Supervise subordinate work.</p> <p>13) Arrange for maintenance activities.</p> <p>14) Perform subordinate appraisal.</p> <p>15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement.</p> <p>16) Troubleshoot and rectify within work scope.</p>	<p>4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement.</p> <p>5) Coordinate work activities.</p> <p>6) monitor usage of equipment or construction sites to verify safety and specification are met.</p> <p>7) Carry out regular work inspections.</p> <p>8) Order or request materials.</p> <p>9) Attend site meetings.</p> <p>10) Compile site document or record to prepare report.</p> <p>11) Raise safety concerns and identify construction hazard and risk.</p> <p>12) Supervise subordinate work.</p> <p>13) Arrange for maintenance activities.</p> <p>14) Perform subordinate appraisal.</p> <p>15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement.</p> <p>16) Troubleshoot and rectify within work scope.</p>	<p>4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement.</p> <p>5) Coordinate work activities.</p> <p>6) monitor usage of equipment or construction sites to verify safety and specification are met.</p> <p>7) Carry out regular work inspections.</p> <p>8) Order or request materials.</p> <p>9) Attend site meetings.</p> <p>10) Compile site document or record to prepare report.</p> <p>11) Raise safety concerns and identify construction hazard and risk.</p> <p>12) Supervise subordinate work.</p> <p>13) Arrange for maintenance activities</p> <p>14) Perform subordinate appraisal.</p> <p>15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement.</p> <p>16) Troubleshoot and rectify within work scope.</p>

AREA	External Works (Sub-soil Drainage)	External Works (Soak Away Pit)	External Works (Retention Pond)
	17) Prepare reports for sub-soil drainage activities.	17) Prepare reports for soak away pit activities.	17) Prepare reports for retention pond activities.
LEVEL 2	<u>Installer</u> <ol style="list-style-type: none"> 1) Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required. 2) Measure and mark surfaces to lay out work, according to drawings. 3) Operate tools, equipment and machinery. 4) Erect scaffolding or set up ladders, to work above ground level. 5) Carry out assembling or installation of roofing structures, insulation or fixtures according to instruction and drawing. 6) Check trueness of roofing structures, insulation or fixtures assembled or installed according to construction/shop drawing. 7) Coordinate work with other trades in order to smoothen and expedite work progress. 	<u>Concretor</u> <ol style="list-style-type: none"> 1) Read work orders or receive instructions from supervisors or homeowners to determine work requirements. 2) Erect scaffolding or set up ladders, to work above ground level. 3) Carry out assembling or installation of formwork structures, scaffolding or fixtures according to instruction and drawing. 4) Check the forms that hold the concrete to see that they are properly constructed. 5) Calculate amount of concrete mix and time required based on volume required or work orders. 6) Operate tools, equipment and machinery 7) Clean formwork surfaces before concreting. 8) Spread, level, and smooth concrete according to required level. 	<u>Technician</u> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out retention pond works according to procedure and specification. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform housekeeping. 6) Adhere to safety, health and environment regulation.

AREA	External Works (Sub-soil Drainage)	External Works (Soak Away Pit)	External Works (Retention Pond)
	8) Comply with architectural/structural guidelines and standards. 9) Liase with supervisor to carry out architectural/structural work. 10) Perform housekeeping. 11) Adhere to safety, health and environment regulation.	9) Prepare and monitor the curing of the concrete throughout the entire process. 10) Comply with architectural guidelines and standards. 11) Liase with supervisor to carry out architectural work. 12) Perform housekeeping. 13) Adhere to safety, health and environment regulation.	
LEVEL 1	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety health and environment regulation.	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety health and environment regulation.	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping 8) Adhere to safety health and environment regulation.

Table 4.52: List of Occupational Responsibilities for Group 439 based on Table 4.25 (6 of 8)

AREA	External Works (Turfing & Landscaping)	External Works (Building Information Modelling (BIM))
LEVEL 8	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	Not Available
LEVEL 7	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 	Not Available

AREA	External Works (Turving & Landscaping)	External Works (Building Information Modelling (BIM))
	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk. 	
LEVEL 6	<p><u>Construction/Site Manager</u></p> <ul style="list-style-type: none"> 1) Manage project cost to stay within project limits. 2) Develop scope of work and project function. 3) Provide overall project status report to project team management and client. 4) Update project progress or status to top management. 5) Prepare project documentation such as diagram, masterplan, overall work programme. 	<p><u>BIM Manager</u></p> <ul style="list-style-type: none"> 1) Attend and coordinate all BIM matter with various consultant and relevant authorities. 2) Review and ensure BIM drawing in term of functionality buildability maintainability cost efficient and sustainability aspect are complied. 3) Implement BIM best practice project. 4) Lead standardisation of BIM design across various asset classes

AREA	External Works (Turfing & Landscaping)	External Works (Building Information Modelling (BIM))
	<ul style="list-style-type: none"> 6) Review design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Prepare request for information (RFI) to clarify uncertainties 8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation. 9) Communicate with consultant for project progress and matters arising. 10) Coordinate with safety, health and environmental officer to ensure compliance with regulation. 11) Liase with project manager to meet project objectives and scopes of work within budget allocated. 12) Execute risk management activities to minimize project risk. 13) Delegate and assign task to subordinate. 	<ul style="list-style-type: none"> 5) Implement cost management to ensure BIM design is efficient and meets project requirement. 6) Liase and coordinates with consultant for BIM submission and approval. 7) Facilitate discussion between consultant and contractor on site to resolve BIM design and construction issue. 8) Participate in construction management process for smooth progress of BIM works.
LEVEL 5	<p><u>Site Engineer</u></p> <ul style="list-style-type: none"> 1) Plan, schedule, or coordinate turfing and landscaping activities to meet deadlines. 2) Prepare project costing and request budget estimates. 3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress. 5) Plan and organize construction maintenance activities 	<p><u>BIM Engineer</u></p> <ul style="list-style-type: none"> 1) Plan, schedule, or coordinate BIM to meet deadlines. 2) Inspect or review project deliverables to monitor compliance with requirement. 3) Monitor work progress. 4) Interpret project brief to identify scope of work. 5) Facilitate construction by applying BIM and CAD technologies in the design phase. 6) Organise cross-team support for BIM software.

AREA	External Works (Turfing & Landscaping)	External Works (Building Information Modelling (BIM))
	<ul style="list-style-type: none"> 6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work programme/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme. 	<ul style="list-style-type: none"> 7) Verify all models are compatible and BIM data is available to all project participants. 8) Collaborate with the design team and other departments to identify goals and communicate procedural changes. 9) Verify dimensions, level, alignment, or elevation of structures or fixtures to ensure compliance to building plans and codes. 10) Confirm installation of plumbing, wiring, equipment, or appliances performed free from interfacing and clashes and follows applicable regulations. 11) Verify overall master list for materials type, quantity, sizing, dimension, cost and duration of completion. 12) Monitor construction activities to ensure that environmental regulations are not violated and according to BIM generated.
LEVEL 4	<p><u>Assistant Site Engineer</u></p> <ul style="list-style-type: none"> 1) Assist to plan, schedule, or coordinate turfing and landscaping to meet deadlines. 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 	<p><u>BIM Modeller</u></p> <ul style="list-style-type: none"> 1) Facilitate construction by applying BIM and CAD technologies in the design phase. 2) Participate cross-team support for BIM software. 3) Ensure all models are compatible and BIM data is available to all project participants. 4) Collaborate with the design team and other departments to identify goals and communicate procedural changes.

AREA	External Works (Turfing & Landscaping)	External Works (Building Information Modelling (BIM))
	<ul style="list-style-type: none"> 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 10) Assist to develop or implement quality control and environmental protection programme. 	<ul style="list-style-type: none"> 5) Measure dimensions and verify level, alignment, or elevation of structures or fixtures to ensure compliance to building plans and codes. 6) Confirm installation of plumbing, wiring, equipment, or appliances performed free from interfacing and clashes and follows applicable regulations. 7) Generate overall master list for materials type, quantity, sizing, dimension, cost and duration of completion. 8) Monitor construction activities to ensure that environmental regulations are not violated and according to BIM generated. 9) Generate BIM according to Level of Development (LOD).
LEVEL 3	<p><u>Site Supervisor</u></p> <ul style="list-style-type: none"> 1) Prepare daily work schedule, coordinate and supervise for turfing and landscaping activities. 2) Conduct site safety and induction briefing. 3) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 4) Coordinate work activities. 5) monitor usage of equipment or construction sites to verify safety and specification are met. 6) Carry out regular work inspections. 7) Order or request materials. 8) Compile site document or record to prepare report. 	No Level

AREA	External Works (Turfing & Landscaping)	External Works (Building Information Modelling (BIM))
	9) Raise safety concerns and identify construction hazard and risk. 10) Supervise subordinate work. 11) Arrange for maintenance activities. 12) Prepare reports for turfing and landscaping activities.	
LEVEL 2	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out turfing and landscaping works according to procedure and specification. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform housekeeping. 6) Adhere to safety, health and environment regulation.	No Level
LEVEL 1	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety health and environment regulation.	No Level

Table 4.53: List of Occupational Responsibilities for Group 439 based on Table 4.25 (7 of 8)

AREA	Subsurface Works (Utilities Mapping)	Subsurface Works (Horizontal Direct Drilling (HDD))
LEVEL 8	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<p><u>Project Director</u></p> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 	<p><u>Project Manager</u></p> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme.

AREA	Subsurface Works (Utilities Mapping)	Subsurface Works (Horizontal Direct Drilling (HDD))
	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk. 	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk.
LEVEL 6	<p><u>Construction/Site Manager</u></p> <ul style="list-style-type: none"> 1) Manage project cost to stay within project limits. 2) Develop scope of work and project function. 3) Provide overall project status report to project team management and client. 4) Update project progress or status to top management. 5) Prepare project documentation such as diagram, masterplan, overall work programme. 	<p><u>Construction/Site Manager</u></p> <ul style="list-style-type: none"> 1) Manage project cost to stay within project limits. 2) Develop scope of work and project function. 3) Provide overall project status report to project team management and client. 4) Update project progress or status to top management. 5) Prepare project documentation such as diagram, masterplan, overall work programme.

AREA	Subsurface Works (Utilities Mapping)	Subsurface Works (Horizontal Direct Drilling (HDD))
	<ul style="list-style-type: none"> 6) Review design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Prepare request for information (RFI) to clarify uncertainties. 8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation. 9) Communicate with consultant for project progress and matters arising. 10) Coordinate with safety, health and environmental officer to ensure compliance with regulation. 11) Liaise with project manager to meet project objectives and scopes of work within budget allocated. 12) Execute risk management activities to minimize project risk. 13) Delegate and assign task to subordinate. 	<ul style="list-style-type: none"> 6) Review design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Prepare request for information (RFI) to clarify uncertainties. 8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation. 9) Communicate with consultant for project progress and matters arising. 10) Coordinate with safety, health and environmental officer to ensure compliance with regulation. 11) Liaise with project manager to meet project objectives and scopes of work within budget allocated. 12) Execute risk management activities to minimize project risk. 13) Delegate and assign task to subordinate.
LEVEL 5	<p><u>Site Engineer</u></p> <ul style="list-style-type: none"> 1) Plan, schedule, or coordinate utilities mapping activities to meet deadlines. 2) Prepare project costing and request budget estimates. 3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress. 5) Plan and organize construction maintenance activities. 	<p><u>Site Engineer</u></p> <ul style="list-style-type: none"> 1) Plan, schedule, or coordinate HDD activities to meet deadlines. 2) Prepare project costing and request budget estimates. 3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress. 5) Plan and organize construction maintenance activities. 6) Interpret project brief to identify work sequence and appropriate construction method.

AREA	Subsurface Works (Utilities Mapping)	Subsurface Works (Horizontal Direct Drilling (HDD))
	<ul style="list-style-type: none"> 6) Interpret project brief to identify work sequence and appropriate construction method. 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work programme/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme. 	<ul style="list-style-type: none"> 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work programme/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme.
LEVEL 4	<p><u>Assistant Site Engineer</u></p> <ul style="list-style-type: none"> 1) Assist to plan, schedule, or coordinate utilities mapping to meet deadlines. 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 	<p><u>Assistant Site Engineer</u></p> <ul style="list-style-type: none"> 1) Assist to plan, schedule, or coordinate HDD to meet deadlines. 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 9) Assist to direct and supervise construction contractor, sub-contractor or related worker.

AREA	Subsurface Works (Utilities Mapping)	Subsurface Works (Horizontal Direct Drilling (HDD))
	9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 10) Assist to develop or implement quality control and environmental protection programme.	10) Assist to develop or implement quality control and environmental protection programme.
LEVEL 3	<u>Site Supervisor</u> 1) Prepare daily work schedule, coordinate and supervise for utilities mapping activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal.	<u>Site Supervisor</u> 1) Prepare daily work schedule, coordinate and supervise for HDD activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) Monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal.

AREA	Subsurface Works (Utilities Mapping)	Subsurface Works (Horizontal Direct Drilling (HDD))
	15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within work scope. 17) Prepare reports for utilities mapping activities.	15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement 16) Troubleshoot and rectify within work scope. 17) Prepare reports for HDD activities.
LEVEL 2	<u>Technician</u> 1) Operate tools, equipment and machinery. 2) Carry out utilities mapping works according to procedure and specification. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform housekeeping. 6) Adhere to safety, health and environment regulation.	<u>Machine Operator</u> 1) Operate tools, equipment and machinery. 2) Carry out construction works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform housekeeping. 6) Adhere to safety, health and environment regulation.
LEVEL 1	No Level	<u>General Worker</u> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping.

Table 4.54: List of Occupational Responsibilities for Group 439 based on Table 4.26 (8 of 8)

AREA	Subsurface Works (Vertical Shaft Sinking)	Subsurface Works (Tunnel Boring)
LEVEL 8	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams. 	<u>Project Director</u> <ol style="list-style-type: none"> 1) Develop a timeline for the completion for a certain milestone for a project. 2) Monitor project progress, provide financial control and expenses as well as ensure project quality. 3) Recommend changes to project that is appears not according to schedule. 4) Present proposal to client and stakeholder on financial standing and team readiness. 5) Perform regular meeting with client, third parties, and project manager to report progress. 6) Build strong relationship with client. 7) Make strategic decision and provide necessary leadership and direction for teams.
LEVEL 7	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme. 	<u>Project Manager</u> <ol style="list-style-type: none"> 1) Approve project cost to stay within project limits. 2) Approve developed scope of work and project function. 3) Verify overall project status report and present to project team management and client. 4) Update project progress or status to top management and client. 5) Verify project documentation such as diagram, masterplan, overall work programme.

AREA	Subsurface Works (Vertical Shaft Sinking)	Subsurface Works (Tunnel Boring)
	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk. 	<ul style="list-style-type: none"> 6) Approve design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Approve request for information (RFI) to clarify uncertainties. 8) Verify works of sub-contractors to ensure quality and conformance to design specifications, budget allocation and client requirement. 9) Liase and negotiate with consultant for project progress deadline and matters arising. 10) Initiate programme or instruct construction site manager to conform with safety, health and environmental officer to ensure compliance with regulation. 11) Lead project team to meet project objectives and scopes of work within budget allocated. 12) Perform risk management activities to minimize project risk.
LEVEL 6	<p><u>Construction/Site Manager</u></p> <ul style="list-style-type: none"> 1) Manage project cost to stay within project limits. 2) Develop scope of work and project function. 3) Provide overall project status report to project team management and client. 4) Update project progress or status to top management. 5) Prepare project documentation such as diagram, masterplan, overall work programme. 	<p><u>Construction/Site Manager</u></p> <ul style="list-style-type: none"> 1) Manage project cost to stay within project limits. 2) Develop scope of work and project function. 3) Provide overall project status report to project team management and client. 4) Update project progress or status to top management. 5) Prepare project documentation such as diagram, masterplan, overall work programme.

AREA	Subsurface Works (Vertical Shaft Sinking)	Subsurface Works (Tunnel Boring)
	<ul style="list-style-type: none"> 6) Review design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Prepare request for information (RFI) to clarify uncertainties. 8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation. 9) Communicate with consultant for project progress and matters arising. 10) Coordinate with safety, health and environmental officer to ensure compliance with regulation 11) Liase with project manager to meet project objectives and scopes of work within budget allocated. 12) Execute risk management activities to minimize project risk. 13) Delegate and assign task to subordinate. 	<ul style="list-style-type: none"> 6) Review design, engineering or construction technical documentation to ensure compliance with regulation industrial code and standard, and client requirement. 7) Prepare request for information (RFI) to clarify uncertainties. 8) Supervise works of sub-contractor to ensure quality and conformance to design specifications and budget allocation. 9) Communicate with consultant for project progress and matters arising. 10) Coordinate with safety, health and environmental officer to ensure compliance with regulation. 11) Liase with project manager to meet project objectives and scopes of work within budget allocated. 12) Execute risk management activities to minimize project risk. 13) Delegate and assign task to subordinate.
LEVEL 5	<p><u>Site Engineer</u></p> <ul style="list-style-type: none"> 1) Plan, schedule, or coordinate vertical shaft sinking activities to meet deadlines. 2) Prepare project costing and request budget estimates. 3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress. 5) Plan and organize construction maintenance activities. 6) Interpret project brief to identify work sequence and appropriate construction method. 	<p><u>Site Engineer</u></p> <ul style="list-style-type: none"> 1) Plan, schedule, or coordinate tunnel boring activities to meet deadlines. 2) Prepare project costing and request budget estimates. 3) Inspect or review project deliverables to monitor compliance with requirement. 4) Monitor work progress. 5) Plan and organize construction maintenance activities. 6) Interpret project brief to identify work sequence and appropriate construction method.

AREA	Subsurface Works (Vertical Shaft Sinking)	Subsurface Works (Tunnel Boring)
	<ul style="list-style-type: none"> 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work programme/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme. 	<ul style="list-style-type: none"> 7) Interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Prepare master work programme/ project milestone. 9) Direct and supervise construction contractor, sub-contractor or related worker. 10) Develop or implement quality control and environmental protection programme.
LEVEL 4	<p><u>Assistant Site Engineer</u></p> <ul style="list-style-type: none"> 1) Assist to plan, schedule, or coordinate vertical shaft sinking to meet deadlines. 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 10) Assist to develop or implement quality control and environmental protection programme. 	<p><u>Assistant Site Engineer</u></p> <ul style="list-style-type: none"> 1) Assist to plan, schedule, or coordinate tunnel boring to meet deadlines. 2) Assist to prepare project costing and request budget estimates. 3) Assist to inspect or review project deliverables to monitor compliance with requirement. 4) Assist to monitor work progress. 5) Assist to plan and organize construction maintenance activities. 6) Assist to interpret project brief to identify work sequence and appropriate construction method. 7) Assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project. 8) Assist to prepare master work programme/ project milestone. 9) Assist to direct and supervise construction contractor, sub-contractor or related worker. 10) Assist to develop or implement quality control and environmental protection programme.

AREA	Subsurface Works (Vertical Shaft Sinking)	Subsurface Works (Tunnel Boring)
LEVEL 3	<p><u>Site Supervisor</u></p> <ol style="list-style-type: none"> 1) Prepare daily work schedule, coordinate and supervise for vertical shaft sinking activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within work scope. 17) Prepare reports for vertical shaft sinking activities. 	<p><u>Site Supervisor</u></p> <ol style="list-style-type: none"> 1) Prepare daily work schedule, coordinate and supervise for tunnel boring activities. 2) Conduct site safety and induction briefing. 3) Assign work to employees based on job. 4) Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement. 5) Coordinate work activities. 6) monitor usage of equipment or construction sites to verify safety and specification are met. 7) Carry out regular work inspections. 8) Order or request materials. 9) Attend site meetings. 10) Compile site document or record to prepare report. 11) Raise safety concerns and identify construction hazard and risk. 12) Supervise subordinate work. 13) Arrange for maintenance activities. 14) Perform subordinate appraisal. 15) Conduct training for construction methods, operation of machinery and equipment, site safety requirement. 16) Troubleshoot and rectify within work scope. 17) Prepare reports for tunnel boring activities.

AREA	Subsurface Works (Vertical Shaft Sinking)	Subsurface Works (Tunnel Boring)
LEVEL 2	<u>Machine Operator</u> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out construction works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform housekeeping. 6) Adhere to safety, health and environment regulation. 	<u>Machine Operator</u> <ol style="list-style-type: none"> 1) Operate tools, equipment and machinery. 2) Carry out construction works according to instruction and drawing. 3) Carry out routine maintenance in accordance to routine schedule. 4) Perform loading and unloading activities of materials. 5) Perform housekeeping. 6) Adhere to safety, health and environment regulation.
LEVEL 1	<u>General Worker</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety health and environment regulation. 	<u>General Worker</u> <ol style="list-style-type: none"> 1) Prepare tools, equipment and machinery. 2) Prepare materials. 3) Assist site works according to instruction. 4) Assist routine maintenance in accordance to routine schedule. 5) Assist in materials loading and unloading activities. 6) Assist to measure, mark or record measurements. 7) Perform housekeeping. 8) Adhere to safety health and environment regulation.

4.6 Mapping OS VS Available NOSS

This section provide a mapping of occupational structure and available NOSS. A total of 97 available NOSS are identified and mapping over with the occupational structure produce. The remaining 63 NOSS are not mapped in the Occupational Structure due to the job titles are not compatible with the current job titles in this study. Table 4.55 below show the list of available NOSS that are not mapped and Table 4.56 to Table 4.70 show the list of mapping OS vs available NOSS.

Table 4.55: List of Available NOSS not included in MSIC 2008 Section F, Division 43

MSIC Group	Corresponding NOSS/ Level	
432 - Electrical, Plumbing And Other Construction Installation Activities	1. BC-045-2:2013	Signage Production & Installation L2
	2. BC-045-3:2013	Signage Supervision L3
	3. F432-004-2:2018	Water Reticulation Installation L2
	4. F432-004-3:2018	Water Reticulation Installation Supervision L3
	5. DS-015-2:2014	Maritime Surveillance System Installation & Maintenance L2
	6. DS-015-3:2014	Maritime Surveillance System Installation & Maintenance Supervision L3
	7. DS-015-4:2014	Maritime Surveillance System Installation & Maintenance Coordination L4
	8. DS-015-5:2014	Maritime Surveillance System Installation & Maintenance Management L5
	9. FPE1	Fire Protection Installer (Electrical) L1 (2003)
	10. FPE2	Fire Protection Installer (Electrical) L2 (2003)
	11. A-020-1	Wood Based Building Constructor L1 (1995)
	12. A-020-2	Wood Based Building Constructor L2 (1995)
	13. A-020-3	Wood Based Building Construction Technician L3 (1995)
	14. A-021-3	Wood Machinist L3 (1995)
	15. EE-042-4:2014	Network Technology L4
	16. EE-211-1:2012	LT Overhead Installation L1

MSIC Group	Corresponding NOSS/ Level	
	17. EE-211-2:2012	LT Overhead Installation & Operation L2
	18. EE-211-3:2012	LT Overhead Installation, Operation & Maintenance L3
	19. EE-302-3:2014	Electrical Chargeman A0 (Low Voltage) L3
	20. EE-303-3:2014	Electrical Chargeman A1 (Low Voltage) L3
	21. EE-304-3:2014	Electrical Chargeman A4 (Low Voltage) L3
433 - Building Completion And Finishing	1. BC-040-1:2013	Stainless Steel Installation L1
	2. BC-040-2:2013	Stainless Steel Fabrication L2
	3. BC-040-3:2013	Stainless Steel Installation & Fabrication Supervision L3
	4. BC-043-3:2014	Pre Stressing L3
	5. GLZ3	Glazier Supervisor L3 (2001)
439 – Other Specialized Construction Activities	1. BC-055-1	Winchman L1 (2012)
	2. BC-055-2	Senior Winchman L2 (2012)
	3. BC-055-3	Winchman Supervisor L3 (2012)
	4. BC-067-2:2016	Ready Mixed Concrete (RMC) Plant Operations L2
	5. BC-067-3:2016	Ready Mixed Concrete (RMC) Plant Operations Supervision L3
	6. F439-003-2:2018	Plant Machinery Operations L2
	7. F439-003-3:2018	Plant Machinery Operations Supervision L3
	8. TRH2	Off Highway Truck Operator L2 (2008)
	9. SCR2	Scraper Operator L2 (2008)
	10. BKP2	Back Pusher Operator L2 (2008)
	11. TCM2	Telescopic Material Handler L2 (2008)
	12. PUC2	Concrete Pump Operator L2 (2008)
	13. RPT2	Pneumatic Tyre Roller Operator L2 (2008)
	14. MTC2	Cold Metal Operator L2 (2008)
	15. PVR2	Paver Operator L2 (2008)
	16. SSL2	Skid Steer Loader Operator L2 (2008)
	17. RLC2	Compactor Roller Operator L2 (2008)

MSIC Group	Corresponding NOSS/ Level	
	18. MC-074-1	Assistant Fabricator (Structure) L1 (2012)
	19. MC-074-2	Fabricator (Structure) L2 (2012)
	20. MC-074-3	Fabrication Supervisor(Structure) L3 (2012)
	21. OG-026-2:2016	Electrical Fitting (Oil & Gas) L2
	22. OG-026-3:2016	Electrical Fitting (Oil & Gas) L3
	23. OG-026-4:2014	Electrical Project Coordination (Oil & Gas) L4
	24. OG-026-5:2014	Electrical Project Management (Oil & Gas) L5
	25. OG-027-2:2016	Instrument Fitting (Oil & Gas) L2
	26. OG-027-3:2016	Instrument Fitting (Oil & Gas) L3
	27. OG-027-4:2014	Instrumentation Project Coordination (Oil & Gas) L4
	28. OG-027-5:2014	Instrumentation Project Management (Oil & Gas) L5
	29. OG-028-2:2016	Mechanical Fitting (Oil & Gas) L2
	30. OG-028-3:2016	Mechanical Fitting (Oil & Gas) L3
	31. OG-028-4:2016	Mechanical Project Coordination (Oil & Gas) L4
	32. OG-028-5:2016	Mechanical Project Management (Oil & Gas) L5
	33. OG-036-2:2016	Habitat System Installation, Monitoring and Handling L2
	34. OG-036-3:2016	Habitat System Operation Supervision L3
	35. W-011-3	Senior Terminal Operator(Gantry Crane) L3 (1998)
	36. W-012-3	Senior Terminal Operator (Rubber Tyred Gantry Crane) L3 (1998)
	37. W-010-2	Terminal Operator(Front End Loader & Reach Stacker) L2 (1998)

Table 4.56: Mapping OS vs Available NOSS (1 of 15)

Section	(F) Construction			
Division	(43) Specialized Construction Activities			
Group	(431) Demolition and Site Preparation			
Area	Environment Preparation	Demolition (Structure)	Demolition (M&E)	Debris Disposal
Level 8	Project Director	Project Director	Project Director	Not Available
Level 7	Project Manager	Project Manager	Project Manager	Not Available
Level 6	Construction/Site Manager	Construction/Site Manager	Construction/Site Manager	Not Available
Level 5	Environment Engineer/Officer	Structure Engineer	M&E Engineer	Not Available
Level 4	Assistant Environment Engineer/Officer	Assistant Structure Engineer	Assistant M&E Engineer	Assistant Structure Engineer
Level 3	Site Supervisor	BC-044-3:2014	BC-044-3:2014	Site Supervisor
Level 2	Handyman	Machinery Operator	Machinery Operator	Handyman
Level 1	General Worker	General Worker	General Worker	General Worker

Table 4.57: Mapping OS VS Available NOSS (2 of 15)

Section	(F) Construction			
Division	(43) Specialized Construction Activities			
Group	(431) Demolition and Site Preparation			
Area	Site Clearing	Earth Works	Soil Treatment	Soil Testing
Level 8	Not Available	Project Director	Project Director	Not Available
Level 7	Not Available	Project Manager	Project Manager	Not Available
Level 6	Not Available	Construction/Site Manager	Construction/Site Manager	Not Available
Level 5	Not Available	Site Engineer	Site Engineer	QA/QC Engineer
Level 4	Assistant Structure Engineer	Assistant Site Engineer	Assistant Site Engineer	Assistant QA/QC Engineer
Level 3	Site Supervisor	F431-001-3:2019	Site Supervisor	QA/QC Supervisor
Level 2	Handyman	F431-001-2:2019	Technician	Technician
Level 1	General Worker	F431-001-1:2019	General Worker	General Worker

Table 4.58: Mapping OS VS Available NOSS (3 of 15)

Section	(F) Construction			
Division	(43) Specialized Construction Activities			
Group	(432) Electrical, Plumbing and Other Construction Installation Activities			
Area	Electrical Works (Electrical Wiring and Fittings)	Electrical Works (Electrical Equipment Installation)	Electrical Works (Lighting Systems)	Electrical Works (Building Lightning Protection System)
Level 8	Project Director	Project Director	Project Director	Project Director
Level 7	Project Manager	Project Manager	Project Manager	Project Manager
Level 6	M&E Manager	M&E Manager	M&E Manager	M&E Manager
Level 5	Electrical Engineer	Electrical Engineer	Electrical Engineer	Electrical Engineer
Level 4	Assistant Electrical Engineer	Assistant Electrical Engineer	Assistant Electrical Engineer	Assistant Electrical Engineer
Level 3	F432-001-3:2017	EE-320-3:2012	BC-047-3:2013 EE-322-3:2013	Electrical Supervisor
Level 2	F432-001-2:2017	EE-320-2:2012	BC-047-2:2013	Technician
Level 1	Wireman	Wireman	Wireman	Wireman

Table 4.59: Mapping OS VS Available NOSS (4 of 15)

Section	(F) Construction			
Division	(43) Specialized Construction Activities			
Group	(432) Electrical, Plumbing and Other Construction Installation Activities			
Area	Electrical Works (Solar Power Supply)	Electrical Works (Building Security Systems)	Electrical Works (Building Automated & Telemetry System)	Electrical Works (High Tension (HT) Cabling Works)
Level 8	Project Director	Project Director	Project Director	Project Director
Level 7	Project Manager	Project Manager	Project Manager	Project Manager
Level 6	M&E Manager	M&E Manager	M&E Manager	M&E Manager
Level 5	EE-210-5	Electrical Engineer	Electrical Engineer	EE-320-5:2012
Level 4	EE-210-4	Assistant Electrical Engineer	Assistant Electrical Engineer	EE-320-4:2012
Level 3	EE-210-3	DS-050-3:2013 EE-323-3:2013	Electrical Supervisor	EE-300-3:2014 EE-301-3:2014
Level 2	EE-210-2	Technician	Technician	Technician
Level 1	Wireman	Wireman	Wireman	Wireman

Table 4.60: Mapping OS VS Available NOSS (5 of 15)

Section	(F) Construction		
Division	(43) Specialized Construction Activities		
Group	(432) Electrical, Plumbing and Other Construction Installation Activities		
Area	Electrical Works (Telecommunications Works)	Electrical Works (Radio Frequency Protection (RFP) System)	Electrical Works (Maintenance)
Level 8	Project Director	Project Director	Project Director
Level 7	Project Manager	Project Manager	Project Manager
Level 6	M&E Manager	M&E Manager	M&E Manager
Level 5	EE-324-5:2013	Electrical Engineer	EE-320-5:2012 EE-324-5:2013
Level 4	EE-324-4:2013	Assistant Electrical Engineer	EE-320-4:2012 EE-324-4:2013
Level 3	EE-324-3:2013	Electrical Supervisor	EE-210-3 EE-322-3:2013 EE-323-3:2013 EE-324-3:2013
Level 2	Technician	Technician	EE-210-2 EE-320-2:2012
Level 1	Wireman	Wireman	Wireman

Table 4.61: Mapping OS VS Available NOSS (6 of 15)

Section	(F) Construction			
Division	(43) Specialized Construction Activities			
Group	(432) Electrical, Plumbing and Other Construction Installation Activities			
Area	Plumbing Works (Cold Water System)	Plumbing Works (Hot Water System)	Plumbing Works (Sanitary System)	Plumbing Works (Water Tank Installation)
Level 8	Project Director	Project Director	Project Director	Project Director
Level 7	Project Manager	Project Manager	Project Manager	Project Manager
Level 6	M&E Manager	M&E Manager	M&E Manager	M&E Manager
Level 5	Mechanical Engineer	Mechanical Engineer	Mechanical Engineer	Mechanical Engineer
Level 4	Assistant Mechanical Engineer	Assistant Mechanical Engineer	Assistant Mechanical Engineer	Assistant Mechanical Engineer
Level 3	Mechanical Supervisor	Mechanical Supervisor	F432-002-3:2017	Mechanical Supervisor
Level 2	Technician	Technician	F432-002-2:2017	Technician
Level 1	Pipe Fitter	Pipe Fitter	Pipe Fitter	Pipe Fitter

Table 4.62: Mapping OS VS Available NOSS (7 of 15)

Section	(F) Construction			
Division	(43) Specialized Construction Activities			
Group	(432) Electrical, Plumbing and Other Construction Installation Activities			
Area	Mechanical Works (Air-Conditioning & Refrigeration System)	Mechanical Works (Ventilation System)	Mechanical Works (Heating System)	Mechanical Works (Fire Protection System)
Level 8	Project Director	Project Director	Project Director	Project Director
Level 7	Project Manager	Project Manager	Project Manager	Project Manager
Level 6	M&E Manager	M&E Manager	M&E Manager	M&E Manager
Level 5	ME-020-5:2012	ME-020-5:2012	ME-020-5:2012	Mechanical Engineer
Level 4	ME-020-4:2012	ME-020-4:2012	ME-020-4:2012	Assistant Mechanical Engineer
Level 3	F432-003-3:2017 ME-020-3:2012	F432-003-3:2017 ME-020-3:2012	ME-020-3:2012	FPA3 FPP3
Level 2	F432-003-2:2017 ME-020-2:2012 ME-021-2:2012	F432-003-2:2017 ME-020-2:2012 ME-021-2:2012	ME-020-2:2012 ME-021-2:2012	FPM2 FPP2
Level 1	Mechanical Fitter	Mechanical Fitter	Mechanical Fitter	FPM1 FPP1

The Available NOSS of BC-056-3:2014 in this table are obtained from Group 439

Table 4.63: Mapping OS VS Available NOSS (8 of 15)

Section	(F) Construction		
Division	(43) Specialized Construction Activities		
Group	(432) Electrical, Plumbing and Other Construction Installation Activities		
Area	Mechanical Works (Elevator System)	Mechanical Works (Escalator & Travellator System)	Mechanical Works (Automated Building Elements)
Level 8	Project Director	Project Director	Project Director
Level 7	Project Manager	Project Manager	Project Manager
Level 6	M&E Manager	M&E Manager	M&E Manager
Level 5	Mechanical Engineer	Mechanical Engineer	Mechanical Engineer
Level 4	Assistant Mechanical Engineer	Assistant Mechanical Engineer	Assistant Mechanical Engineer
Level 3	BC-064-3:2015 BC-056-3:2014	BC-064-3:2015	Mechanical Supervisor
Level 2	BC-064-2:2015	BC-064-2:2015	Technician
Level 1	Mechanical Fitter	Mechanical Fitter	Mechanical Fitter

Table 4.64: Mapping OS VS Available NOSS (9 of 15)

Section	(F) Construction		
Division	(43) Specialized Construction Activities		
Group	(432) Electrical, Plumbing and Other Construction Installation Activities		
Area	Mechanical Works (Vacuum Cleaning System)	Mechanical Works (Building Dehumidification System)	Mechanical Works (Maintenance)
Level 8	Project Director	Project Director	Project Director
Level 7	Project Manager	Project Manager	Project Manager
Level 6	M&E Manager	M&E Manager	M&E Manager
Level 5	Mechanical Engineer	Mechanical Engineer	ME-020-5:2012
Level 4	Assistant Mechanical Engineer	Assistant Mechanical Engineer	ME-020-4:2012
Level 3	Mechanical Supervisor	Mechanical Supervisor	F432-003-3:2017 BC-065-3:2015 FPS3 ME-020-3:2012
Level 2	Technician	Technician	F432-003-2:2017 FPS2 ME-020-2:2012 ME-021-2:2012
Level 1	Mechanical Fitter	Mechanical Fitter	FPS1

The Available NOSS of ID-021-1, ID-021-2, ID-021-3 in this table are obtained from Group 432

Table 4.65: Mapping OS VS Available NOSS (10 of 15)

Section	(F) Construction			
Division	(43) Specialized Construction Activities			
Group	(433) Building Completion and Finishing			
Area	Architectural Works (Wall Construction)	Architectural Works (Floor Construction)	Architectural Works (Ceiling Construction)	Architectural Works (Staircase Construction)
Level 8	Project Director	Project Director	Project Director	Project Director
Level 7	Project Manager	Project Manager	Project Manager	Project Manager
Level 6	Construction Manager	Construction Manager	Construction Manager	Construction Manager
Level 5	DWC5	Architect	DWC5	Architect
Level 4	DWC4	Assistant Architect	DWC4	Assistant Architect
Level 3	DWC 3 DWP 3	Supervisor	ID-021-3 DCS 3	Supervisor
Level 2	DWC 2 DWP 2	Installer	ID-021-2 DCG 2 DCF 2	Installer
Level 1	DWC 1 DWP 1	General Worker	ID-021-1 DCG 1 DCF 1	General Worker

Table 4.66: Mapping OS VS Available NOSS (11 of 15)

Section	(F) Construction			
Division	(43) Specialized Construction Activities			
Group	(433) Building Completion And Finishing			
Area	Architectural Works (Window Installation)	Architectural Works (Door Installation)	Architectural Works (Furniture Installation)	Architectural Works (Damp & Water Proofing)
Level 8	Project Director	Project Director	Project Director	Project Director
Level 7	Project Manager	Project Manager	Project Manager	Project Manager
Level 6	Construction Manager	Construction Manager	Construction Manager	Construction Manager
Level 5	Architect	Architect	Architect	Architect
Level 4	Assistant Architect	Assistant Architect	Assistant Architect	Assistant Architect
Level 3	ID-020-3 F433-002-3:2017	ID-020-3	RB-051-3 BC-035-3:2016	BC-046-3:2013
Level 2	ID-020-2 F433-002-2:2017	ID-020-2	RB-051-2	BC-046-2:2013
Level 1	ID-020-1	ID-020-1	RB-051-1	General Worker

Table 4.67: Mapping OS VS Available NOSS (12 of 15)

Section	(F) Construction		
Division	(43) Specialized Construction Activities		
Group	(433) Building Completion and Finishing		
Area	Architectural Works (Painting Works)	Architectural Works (Plastering Works)	Architectural Works (Anti-Termite)
Level 8	Project Director	Project Director	Project Director
Level 7	Project Manager	Project Manager	Project Manager
Level 6	Construction Manager	Construction Manager	Construction Manager
Level 5	PTD5	Architect	Architect
Level 4	PTD4	Assistant Architect	Assistant Architect
Level 3	F433-004-3:2018 PTD3	Supervisor	Supervisor
Level 2	F433-004-2:2018 PTD2 PTC2	Plasterer	Applicator
Level 1	PTD1 PTC1	General Worker	General Worker

The Available NOSS of F433-001-2:2017, F433-003-2:2018, FWA 3, F433-003-3:2018 in this table are obtained from Group 432

Table 4.68: Mapping OS VS Available NOSS (13 of 15)

Section	(F) Construction			
Division	(43) Specialized Construction Activities			
Group	(439) Other Specialized Construction Activities			
Area	Specialized Machineries	Piling Work	Pile Testing	Steel/Aluminium Formwork
Level 8	Project Director	Project Director	Not Available	Project Director
Level 7	Project Manager	Project Manager	Not Available	Project Manager
Level 6	M&E Manager	Construction/Site Manager	Not Available	Construction/Site Manager
Level 5	Mechanical Engineer	Site Engineer	QA/QC Engineer	Site Engineer
Level 4	Assistant Mechanical Engineer	Assistant Site Engineer	Assistant QA/QC Engineer	Assistant Site Engineer
Level 3	F439-001-3:2017	BC-062-3:2015	QA/QC Supervisor	FWA 3 F433-003-3:2018
Level 2	Machinery Operator	BC-062-2:2015	Technician	F433-001-2:2017 F433-003-2:2018
Level 1	General Worker	General Worker	General Worker	General Worker

Table 4.69: Mapping OS VS Available NOSS (14 of 15)

Section	(F) Construction			
Division	(43) Specialized Construction Activities			
Group	(439) Other Specialized Construction Activities			
Area	Scaffolding	Steam Cleaning	Sand Blasting	Chimneys and Industrial Oven
Level 8	Project Director	Project Director	Project Director	Project Director
Level 7	Project Manager	Project Manager	Project Manager	Project Manager
Level 6	M&E Manager	M&E Manager	Construction/Site Manager	M&E Manager
Level 5	SCF5	Mechanical Engineer	Site Engineer	Mechanical Engineer
Level 4	SCF4	Assistant Mechanical Engineer	Assistant Site Engineer	Assistant Mechanical Engineer
Level 3	BC-061-3:2015	Mechanical Supervisor	Site Supervisor	Mechanical Supervisor
Level 2	BC-061-2:2015	Technician	Technician	Installer
Level 1	BC-061-1:2015	Mechanical Fitter	General Worker	General Worker

Table 4.70: Mapping OS VS Available NOSS (15 of 15)

Section	(F) Construction				
Division	(43) Specialized Construction Activities				
Group	(439) Other Specialized Construction Activities				
Area	External Works (Sub-Soil Drainage)	External Works (Soak Away Pit)	External Works (Retention Pond)	External Works (Turbing & Landscaping)	External Works (Building Information Modelling (BIM))
Level 8	Project Director	Project Director	Project Director	Project Director	Not Available
Level 7	Project Manager	Project Manager	Project Manager	Project Manager	Not Available
Level 6	Construction/Site Manager	Construction/Site Manager	Construction/Site Manager	Construction/Site Manager	BIM Manager
Level 5	Site Engineer	Site Engineer	Site Engineer	Site Engineer	BIM Engineer
Level 4	Assistant Site Engineer	Assistant Site Engineer	Assistant Site Engineer	Assistant Site Engineer	BIM Modeller
Level 3	Site Supervisor	Site Supervisor	Site Supervisor	F439-002-3:2017	No Level
Level 2	Installer	Concretor	Technician	F439-002-2:2017	No Level
Level 1	General Worker	General Worker	General Worker	General Worker	No Level

4.7 Occupational Description

Occupational Description is a broad, general, and written statement of a specific job, based on the findings of a job analysis. It generally includes duties, purpose, responsibilities, scope, and working conditions of a job along with the job's title, and the name or designation of the person to whom the employee reports. There are 67 OD provided in Annex 6 are the job titles that have been identified as critical by industry representatives from focus group.

4.8 Conclusion

Based on the discussions with panel members during the development workshops, the OS of the industry is produced in this chapter. The OS would provide information of the competency or job areas applicable to the industry, and the skill level of the different job titles, according to the MOSQF Level Descriptors, and the available career paths.

The jobs and competencies in demand, and the specific steps proposed to be taken by various parties to bridge the skills gaps are elaborated so that the parties concerned could take the necessary steps to overcome such challenges.

CHAPTER 5: DISCUSSION, RECOMMENDATION AND CONCLUSION

5.1 Discussion

Based on the findings obtained throughout the Occupational Analysis on the industry, sub sectors have been identified and confirmed to be in tandem with MSIC 2008. The total of 560 job titles identified from this study are requires a holistic view in development of standard, skills training and also certification for recognition, especially for 67 critical job title identified. If the competency requirements documented in NOSS format, the personnel in these areas will obtain a more structured skills training and also enable personnel who are experienced and skilled to be certified. For the job title related to IR4.0, there are 19 job title identified from the focus group discussion. As for the industry survey conducted, based on the number of 72 questionnaires distributed, there are 51 total number of questionnaires collected. This number of respondents had achieved the total number of targeted respondents which is 36 respondents.

The list of 160 NOSS which are already developed under 2 digit MSIC 2018 Division 43: Specialized construction activities is presented in Table 2.8. and a total of 97 NOSS are currently mapped with the developed occupational structure from this study. The remaining 63 NOSS are not mapped in the Occupational Structure due to the job titles are not compatible with the current job titles in this study. This study also provides a more comprehensive view of the industry needs in terms of skill development and thus is able to assist in strategising the NOSS development for other critical job areas.

5.2 Recommendation

It is hoped that the result of this Occupational Framework will be used as reference to fulfil the future plans of developing skilled personnel and certifying Malaysians in this sector towards improving the quality of the local sector and thus spurring Malaysia's global competitiveness.

There are several options when addressing or mitigating workforce demand and supply. It may include establishing and maintaining partnerships with other agencies or departments, or educational institutions to increase external talent pools and also through the training of existing staff in line with new skills requirements.

Based on the above comments, specific recommendations are listed below:

- a) To continue and streamline efforts in NOSS development for areas under the sector in line with the findings of this analysis. This includes the development of the NOSS for the sectors and sub-sectors that are in demand and have not been developed.
- b) To have more industry players to be accredited as training provider for National Dual Training System (NDTS) for the related sub sector and job area.
- c) Promote certification of existing and experienced personnel in the sector through Recognition Prior Achievement (*Pengiktirafan Pencapaian Terdahulu* – PPT).
- d) Collaboration with learning institution to develop syllabus that matches the industry requirement.
- e) The government and stakeholder need to take an action plan (such as provide incentive to contractor that hired the local worker, conduct the training programs in order to increase the workforce performance and financial support to the local contractor) regarding the main issues related to the specialized construction activities such as insufficient manpower, training specialized construction activity not available, availability of specialized equipment and machinery, and rapid technology changes

5.3 Conclusion

The conclusion is based on the specified objectives of the Occupational Framework as elaborated below:

Objective 1: To propose Occupational Structure (OS) for specialized construction activities industry based on MSIC 2008

As result of the Occupational Framework conducted together with expert panel members from various organizations, a total of 71 areas and 560 job titles have been identified. By planning and conducting the training and certification of this sector personnel in the near future, it is hoped that there are a steady flow of local skilled and certified workers.

Objective 2: To identify the competencies in demand in the industry of specialized construction activities

Based on the finding, the competencies in demand for the specialized construction activities are the housekeeping knowledge. Other common answers obtained through the survey are machinery knowledge and skills, administration & management skills and forecasting abilities.

Objective 3: To identify critical jobs for the specialized construction activities industry

The findings from the focus group discussion has conclude that there are 67 job titles identified as the critical job titles for specialized construction activities. There are 23 job titles are categorised as skilled worker. For the semi-skilled worker and low skilled worker the total job title identified are 33 and 11 respectively.

Objective 4: To propose jobs title related to IR 4.0 in specialized construction activities

Based on the group discussion, there are 19 job titles identified as the job title relevant to IR4.0. From the questionnaires distributed, majority of the respondent agree that Big Data Analytic, Supply Chain and Horizontal and Vertical System Intergration are the 3 main pillar that are related to specialized construction activities.

Objective 5: To establish Occupational Descriptions (OD) for each job title based on latest industry OS

The Occupational Descriptions for all the different job titles were obtained during the workshops and further confirmed by the members of Focus Group Discussion (FGD). These Occupational Descriptions will also serve as reference of job scope and the required competencies for NOSS development.

The relevant accreditations authorities jointly by stakeholders from industry, training/academic institutions need to take an action to ensure that the critical occupation needs by industry are addressed. The broad direction for achieving this are via identify and assess the qualification of National Occupation Skills Standard (NOSS). and competencies associated with the identified critical job titles; align and evaluate the existing training curriculum and training packages; coordination among stakeholder to revise or develop required curriculum and training packages, expend or create new apprenticeship/ internship/ attachments schemes and joint technology and knowledge transfer between instructor/ training entities with industry experts The result of this Occupational Framework research and development work shall be used as references on how to fulfil the future plans of developing skilled personnel and certifying Malaysians in the Construction sector towards enhancing services provided by the sector players.

REFERENCES

Annual Economic Statistics, 2018

Architects Act 1967 [Act 117]. (2019, August 28). Retrieve from <http://www.lam.gov.my/index.php/act-rules/finish/14-act-and-rules/5497-architects-act-1967.html>

Board of Architects Malaysia (LAM). (2019, August 28). Retrieve from <https://www.lam.gov.my/index.php/board-of-architects-malaysia/board-of-architects-malaysia.html>

Board of Engineers Malaysia (BEM). (2019, August 28). Retrieve from <http://www.bem.org.my/web/guest/history>

Board of Quantity Surveyors Malaysia (BQSM). (2019, August 28). Retrieve from <https://www.bqsm.gov.my/index.php/en/about-us/functions>

Centre for Instructor and Advance Skill Training (CIAST). (2019, August 28). Retrieve from <https://www.ciastr.gov.my/?p=739&lang=en>

CIDB Act 1994 [Act 520]. (2019, August 28). Retrieve from <http://www.cidb.gov.my/index.php/en/legislation/act-520>

Construction Industry Development Berhad (CIDB) . (2019, August 28). Retrieve from <http://www.cidb.gov.my/index.php/en/corporate-info/functions>

Department of Skill Development (2019, August 28) retrieved from <https://www.dsd.gov.my/jpkv4/index.php/my/>

Department of Statistics Malaysia. (2008). Malaysia Standard Industrial Classification (MSIC).

Department of Statistic Malaysia (DOSM). (2016). Economic Census 2016

IR 4.0 Technologies in Construction. (2019, August 28). Retrieve from. Retrieved from <https://www.weforum.com>

Malaysia Standard Classification of Occupations, 2013

Malaysian Qualification Agency. 2018. Malaysian Qualification Framework 2nd Edition

Malaysian Highway Authority (MHA). (2019, August 28). Retrieve from http://www.llm.gov.my/corporate_info

Malaysian Offshore Contractors Association (MOCA). (2019, August 28). Retrieve from <https://moca.org.my/about-us/>

Malaysian Offshore Contractors Association (MOCA). (2019, August 28). Retrieve from <https://moca.org.my/moca-resources/>

Malaysian Qualifications Framework (MQF) 2nd Edition, 2018

Master Builders Association Malaysia (MBAM). (2019, August 28). Retrieve from <http://mbam.org.my/mbam-history/>

Ministry of Work (MoW). (2019, August 28). Retrieve from <http://www.kkr.gov.my/en/organization/profile>

National Skills Development Act 652 (2019, August 28) retrieved from <http://www.agc.gov.my/agcportal/index.php>

Public Work Department of Malaysia. (2019, August 28). Retrieve from <https://www.jkr.gov.my/en/page/misi-visi-fungsi-objektif-1>

Real Estate and Housing Developers' Association Malaysia (REHDA). (2019, August 28). Retrieve from <http://rehda.com/about/#AboutREHDA>

Registration of Engineers Act 1967 [Act 138]. (2019, August 28). Retrieve from <http://apec-emf.org/wp-content/uploads/2013/12/ACT2007.pdf>

SURVEYING CONSULTANCY SERVICES. pages 6

The Association of Consulting Engineers Malaysia (ACEM). (2019, August 28). Retrieve from http://www.acem.com.my/index.php?option=com_content&task=view&id=25&Itemid=36

The Malaysian Academy of Buildings (ABM). (2019, August 28). Retrieve from <https://www.akademibinaan.com.my/abmweb/index.php/mengenai-abm/tentang-abm>

U.S. construction industry. (28/8/19). Retrieve from <https://gocontractor.com/blog/us-construction-industry/>

UK Construction: An economic analysis of the sector. pages 1-2

Work Distribution Policy to Class E and F. (2019, August 28). Retrieve from <http://www.kkr.gov.my/en/node/18320>

ANNEX 1: MOSQF LEVEL DESCRIPTION

Malaysian Occupational Skills Qualifications Framework (MOSQF)

(Source: Department of Skills Development)

Level	Level Description
8	Achievement at this level reflects the ability to develop original understanding and extend a sub-area of knowledge or professional practice. It reflects the ability to address problematic situations that involve many complexes, interacting factors through initiating, designing and undertaking research, development or strategic activities. It involves the exercise of broad autonomy, judgement and leadership in sharing responsibility for the development of a field of work or knowledge, or for creating substantial professional or organisational change. It also reflects a critical understanding of relevant theoretical and methodological perspectives and how they affect the field of knowledge or work.
7	Achievement at this level reflects the ability to reformulate and use relevant understanding, methodologies and approaches to address problematic situations that involve many interacting factors. It includes taking responsibility for planning and developing courses of action that initiate or underpin substantial change or development, as well as exercising broad autonomy and judgment. It also reflects an understanding of theoretical and relevant methodological perspectives, and how they affect their sub-area of study or work.
6	Achievement at this level reflects the ability to refine and use relevant understanding, methods and skills to address complex problems that have limited definition. It includes taking responsibility for planning and developing courses of action that are able to underpin substantial change or development, as well as exercising broad autonomy and judgment. It also reflects an understanding of different perspectives, approaches of schools of thought and the theories that underpin them.
5	Achievement at this level reflects the ability to identify and use relevant understanding, methods and skills to address broadly-defined, complex problems. It includes taking responsibility for planning and developing courses of action as well as exercising autonomy and judgment within broad parameters. It also reflects understanding of different perspectives, approaches or schools of thought and the reasoning behind them.
4	Achievement at this level reflects the ability to identify and use relevant understanding, methods and skills to address problems that are well defined but complex and non-routine. It includes taking responsibility for overall courses of action as well as exercising autonomy and

Level	Level Description
	judgment within fairly broad parameters. It also reflects understanding of different perspective or approaches within a sub-area of study or work.
3	Achievement at this level reflects the ability to identify and use relevant understanding, methods and skills to complete task and address problems that are well defined with a measure of complexity. It includes taking responsibility for initiating and completing tasks and procedures as well as exercising autonomy and judgments within limited parameter. It also reflects awareness of different perspectives or approaches within a sub-area of study or work.
2	Achievement at this level reflects the ability to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problem. It includes taking responsibility for completing tasks and procedures, and exercising autonomy and judgment subject to overall direction or guidance.
1	Achievement at this level reflects the ability to use relevant knowledge, skills and procedures to complete routine and predictable tasks that include responsibility for completing tasks and procedures subject to direction or guidance.

ANNEX 2: LIST OF CONTRIBUTORS

**LIST OF SECTOR PANEL MEMBERS FOR THE SPECIALIZED
CONSTRUCTION ACTIVITIES FRAMEWORK DEVELOPMENT**

NO	NAME	ORGANISATION	POSITION
1	Shamsudin Bin Abdul Rahim	Central Glass Facade Sdn. Bhd.	Director
2	Noor Azman Bin Azmi	Portray (M) Sdn. Bhd.	Project Manager
3	Zainuddin Bin Taib	Lembaga Air Perak	Regional Manager
4	Mokhtar Bin Atan	Pengurusan Air Selangor Sdn. Bhd. (AIS)	General Manager
5	Nik Fadzil Bin Nek Zamberi	Grand Dynamic Builders Sdn. Bhd.	Draughtsman Cum BIM Modeller
6	Mohd Hamzy Bin Abdul Samad	Rigid Development Group Sdn. Bhd.	Project Manager
7	Zulkarnil Bin Abdul Majid	Bayulink Sdn. Bhd.	Project Manager
8	Mahaindran A/L Kristnan	JKR Malaysia	Engineer

**LIST OF OCCUPATIONAL FRAMEWORK TECHNICAL EVALUATION
COMMITTEE**

NO	NAME	ORGANIZATION
1	Mohd Dhiya Hafreez bin Kamil	Dasacon Sdn. Bhd.
2	Razali bin Ahmad Zaman	Proven Construction & Development Sdn. Bhd.
3	Rabi'atul'adawiah binti Shabli	Department of Statistics Malaysia

**LIST OF DEPARTMENTS OF SKILLS DEVELOPMENT (DSD) OFFICERS
INVOLVED IN OCCUPATIONAL FRAMEWORK DEVELOPMENT**

NO	NAME	POSITION	ORGANIZATION
1	Siti Fauziah Binti Jumadi	Principal Assistant Director	NOSS Division
2	Jeifrizain Bin Abdul Rasid	Senior Assistant Director	NOSS Division
3	Syazwani Binti Azmi	Senior Assistant Director	NOSS Division
4	Noorazura Binti Adnan	Senior Assistant Director	NOSS Division
5	Norisah Mohd Khalifah	Assistant Director	Planning, Research and Development Division
6	Zainal Bin Abdul Jalil	Assistant Director	NOSS Division

LIST OF RESEARCH TEAM AND SECRETARIAT

NO	NAME	POSITION	ORGANISATION
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4	Ahmad Ramdan Bin M. Yusof	Curriculum Development Executive II	Edusure Sdn Bhd
5	Raihan Binti Tahir	Facilitator	Edusure Sdn Bhd
6	Khairul Alia Binti Mohd Kharudin	Proofreader Team	Edusure Sdn Bhd

7	Dr. Raemah Binti Abdullah Hashim	Researcher Team	Edusure Sdn Bhd
8	Dr. Azahari Bin Jamaludin	Researcher Team	Edusure Sdn Bhd
9	Amir Asyraf Bin Abdul Rahman	Researcher Team	Edusure Sdn Bhd

ANNEX 3: QUESTIONNAIRES

Specialized Construction Activities Industry Occupational Framework Survey

The Department of Skills Development (DSD), Ministry of Human Resources is currently conducting an analysis on the Occupational Framework of the Industry. From this analysis, the industry framework, occupational structure, occupational job titles, and job description will be summarised for the use of the government, private sector, investors, employers, employees, educators or any personnel involved either directly or indirectly with the industry.

The main objective of this research is to enhance skills training starting from the entry level position for any job in this industry based on input from the industry. It will also provide a reference competency for skills required by workers to perform as required in the industry.

This survey will be used as field data in order to conduct a comprehensive analysis of the industry's Occupational Framework. The target group for this survey is the organisation's representative either from the Human Resource Department or personnel at Management level.

We would like to extend our heartfelt gratitude upon your cooperation in answering this survey. Please fill in where necessary in the forms provided. Do advise us if you wish to remain anonymous in your survey response. There will be further communication with survey respondents in order to verify our findings. The completed questionnaire can be emailed to:

Amir Asyraf Bin Abdul Rahman: amir950213@gmail.com

Survey Respondent Details

Organisation :

Date :

Please answer the questions below in the space provided, additional pages may be added if necessary. There are 4 SECTIONS in this 6 PAGES survey.

SECTION 1: COMPETENCY IN DEMAND

1.1 Listed below are set of skills related to personnel involve in **Specialized construction activities industry**. Rate the level of demand to the set of skills by using the scale below:

Category of Skills	Description
Skilled Workers	Managers, Executive, Specialist, and Professional (L4, L5)
Semi-Skilled Workers	Support, Technician, Admin and Machine Operator (L2, L3)
Low Skilled Workers	General Workers (L1)

1	2	3	4
Not in Demand	Low in Demand	Moderate in Demand	High in Demand

NO	COMPETENCY	LOW-SKILLED WORKERS	SEMI-SKILLED WORKERS	SKILLED WORKERS
1	Technical skills			
2	Communication skills			
3	Diagnostic & troubleshooting skills			
4	Problem solving skills			
5	Administration & management skills			
6	Machinery knowledge & skill			
7	Leadership skill			
8	Data collection and analysis			
9	Planning and Forecasting abilities			

NO	COMPETENCY	LOW- SKILLED WORKERS	SEMI- SKILLED WORKERS	SKILLED WORKERS
10	General attitude towards work (commitment, resourcefulness, teamwork, etc.)			
11	Product knowledge			
12	Material approach knowledge			
13	Strong technical aptitude / manual dexterity			
14	Competent in using communication tools			
15	English language competency			
16	Bahasa Malaysia competency			
17	Knowledge in OSHA & Environment			
18	Training and coaching			
19	Knowledge in rules, regulation, & act.			
20	Safety and security			
21	Empowerment skill			
22	Housekeeping Knowledge			

1.2 Based on your observation, do you think the graduates / trainee / apprentice / current workers possess the skills required by the industry? If 'No' please respond to the following questions (Question 1.3 & 1.4).

☐ Yes

☐ No

1.3 What is/are the reason/s for the skills gap? Tick (✓) where applicable, you may tick more than once.

☐ Education / training mismatch

☐ Incompetent trainer

☐ Major changes in traditional training and new skill requirements

☐ Attitude (e.g. lack of desire to work)

☐ Gap between technology and skills

☐ Lack of knowledge

☐ Lack of opportunities

☐ Lack of guidance for future career path

☐ Lack of staff benefit (personal & family insurance, outing, annual leave, etc)

☐ other; please specify:

.....

1.4 What is/are solution/s for the skills gap would you recommend? Tick (✓) where applicable, you may tick more than once.

☐ Training / retraining

☐ Upgrade trainer qualification

☐ Review employment policy (e.g. enhance skilled workers incentives)

☐ Review skills training curriculum

☐ Upskilling / reskilling

☐ Formal mentoring and/or coaching

☐ Continuous learning and training

☐ Career path development programme

☐ Increase salary and emoluments (bonus, increment, allowance, promotion)

☐ Acknowledgement & recognition

☐ other; please specify:

SECTION 2: JOBS IN DEMAND

2.1 Listed below are job areas and description of category of skills. Based on your observation, which job area is experiencing **shortage of manpower** in Specialized Construction Activities Industry?

Tick (✓) where applicable.

Category of Skills	Description
Skilled Workers	Managers, Executive, Specialist, and Professional (L4, L5)
Semi-Skilled Workers	Support, Technician, Admin and Machine Operator (L2, L3)
Low Skilled Workers	General Workers (L1)

No.	Job Areas & Category of Skills	High Shortage	Mid Shortage	Low Shortage	No Shortage
1	Demolition and site preparation				
	a) Skilled Workers				
	b) Semi-Skilled Workers				
	c) Low Skilled Workers				
2	Electrical, plumbing and other construction installation activities				
	a) Skilled Workers				
	b) Semi-Skilled Workers				
	c) Low Skilled Workers				
3	Building completion and finishing				
	a) Skilled Workers				
	b) Semi-Skilled Workers				
	c) Low Skilled Workers				
4	Other specialized construction activities				
	a) Skilled Workers				
	b) Semi-Skilled Workers				
	c) Low Skilled Workers				

SECTION 3: EMERGING SKILLS

(Note: Emerging Skills are skills that are predicted to be imperative to the industry in the near future based on recent development, trend or study)

3.1 Do you think Industry Revolution 4.0 (Digitalization) (IR4.0) would give an impact to the economic activities of Specialized Construction Activities Industry?

☐ Yes

☐ No

☐ Not sure

3.2 Listed below are the Eleven (11) technology drives/pillars of IR 4.0. Which job area is likely to be affected by these 11 technology drives/pillars of IR 4.0?

Tick (✓) where applicable, you may tick more than once.

No.	Technology Drives / Pillars	Relevancy
1	Additive Manufacturing	
2	Autonomous Robots	
3	Artificial Intelligence	
4	Big Data Analytics	
5	Cloud	
6	Cybersecurity	
7	Horizontal & Vertical Integration	
8	Internet of Things	
9	New Business Model	
10	Simulation & Augmented Reality	
11	Supply Chain	

SECTION 4: RELATED ISSUES

4.1 What is/are the key issue/s related to Specialise construction activities Industry?

Please rate **ALL** the key issues by using the scale below.

1	2	3	4
Strongly Disagree	Disagree	Agree	Strongly Agree

No	KEY ISSUES	Scale
1	Availability of specialized equipment and machinery	
2	High maintainability cost of specialized equipment and machinery	
3	Training specialized construction activity not available	
4	Unattractive training benefits	
5	Insufficient skill manpower	
6	Incompetent workforce	
7	Under performance workforce	
8	High dependency on foreign labour (Low skill & Semi Skill level)	
9	Low wages lead to high turn over	
10	Lack of Quality Assurance Programme	
11	Compromise quality over profitability	
12	Rapid technology changes	
13	Youth not interested in technical field	
14	Lack of exposure for youth	
15	Lack of infrastructure support for worker	

End of Questionnaire

ANNEX 4: LIST OF CRITICAL JOB TITLES

List of Critical Job Titles for Specialized construction activities

No	Critical Job Title	Area	Level	LS	SS	S
1	Site Engineer	Soil Treatment	5	X	X	√
2	Assistant Site Engineer	Soil Treatment	4	X	X	√
3	Site Supervisor	Soil Treatment	3	X	√	X
4	Technician	Soil Treatment	2	X	√	X
5	General Worker	Soil Treatment	1	√	X	X
6	Electrical Engineer	Electrical Works (Solar Power Supply)	5	X	X	√
7	Assistant Electrical Engineer	Electrical Works (Solar Power Supply)	4	X	X	√
8	Electrical Supervisor	Electrical Works (Solar Power Supply)	3	X	√	X
9	Technician	Electrical Works (Solar Power Supply)	2	X	√	X
10	Wireman	Electrical Works (Solar Power Supply)	1	√	X	X
11	Electrical Engineer	Electrical Works (Building Security Systems)	5	X	X	√
12	Assistant Electrical Engineer	Electrical Works (Building Security Systems)	4	X	X	√
13	Electrical Supervisor	Electrical Works (Building Security Systems)	3	X	√	X
14	Technician	Electrical Works (Building Security Systems)	2	X	√	X
15	Wireman	Electrical Works (Building Security Systems)	1	√	X	X
16	Electrical Engineer	Electrical Works (Building Automated & Telemetry System)	5	X	X	√
17	Assistant Electrical Engineer	Electrical Works (Building Automated & Telemetry System)	4	X	X	√

No	Critical Job Title	Area	Level	LS	SS	S
18	Electrical Supervisor	Electrical Works (Building Automated & Telemetry System)	3	X	√	X
19	Technician	Electrical Works (Building Automated & Telemetry System)	2	X	√	X
20	Wireman	Electrical Works (Building Automated & Telemetry System)	1	√	X	X
21	Mechanical Engineer	Plumbing Works (Solar Heating System)	5	X	X	√
22	Assistant Mechanical Engineer	Plumbing Works (Solar Heating System)	4	X	X	√
23	Mechanical Supervisor	Plumbing Works (Solar Heating System)	3	X	√	X
24	Technician	Plumbing Works (Solar Heating System)	2	X	√	X
25	Pipe Fitter	Plumbing Works (Solar Heating System)	1	√	X	X
26	Mechanical Supervisor	Mechanical Works (Air-Conditioning & Refrigeration System)	3	X	√	X
27	Mechanical Supervisor	Mechanical Works (Ventilation System)	3	X	√	X
28	Mechanical Supervisor	Mechanical Works (Heating System)	3	X	√	X
29	Mechanical Supervisor	Mechanical Works (Fire Protection System)	3	X	√	X
30	Mechanical Engineer	Mechanical Works (Pumping System)	5	X	X	√
31	Assistant Mechanical Engineer	Mechanical Works (Pumping System)	4	X	X	√
32	Mechanical Supervisor	Mechanical Works (Pumping System)	3	X	√	X
33	Technician	Mechanical Works (Pumping System)	2	X	√	X
34	Mechanical Fitter	Mechanical Works (Pumping System)	1	√	X	X
35	Mechanical Supervisor	Mechanical Works (Gas Piping System)	3	X	√	X

No	Critical Job Title	Area	Level	LS	SS	S
36	Mechanical Supervisor	Mechanical Works (Thermal Insulation)	3	X	√	X
37	Mechanical Supervisor	Mechanical Works (Sound & Vibration Insulation)	3	X	√	X
38	Mechanical Engineer	Mechanical Works (Elevator System)	5	X	X	√
39	AssistantMechanical Engineer	Mechanical Works (Elevator System)	4	X	X	√
40	Mechanical Supervisor	Mechanical Works (Elevator System)	3	X	√	X
41	Technician	Mechanical Works (Elevator System)	2	X	√	X
42	Mechanical Fitter	Mechanical Works (Elevator System)	1	√	X	X
43	Mechanical Engineer	Mechanical Works (Escalator & Travellator System)	5	X	X	√
44	AssistantMechanical Engineer	Mechanical Works (Escalator & Travellator System)	4	X	X	√
45	Mechanical Supervisor	Mechanical Works (Escalator & Travellator System)	3	X	√	X
46	Technician	Mechanical Works (Escalator & Travellator System)	2	X	√	X
47	Mechanical Fitter	Mechanical Works (Escalator & Travellator System)	1	√	X	X
48	Mechanical Supervisor	Mechanical Works (Automated Building Elements)	3	X	√	X
49	Mechanical Supervisor	Mechanical Works (Vacuum Cleaning System)	3	X	√	X
50	Mechanical Supervisor	Mechanical Works (Building Dehumidification System)	3	X	√	X
51	Mechanical Supervisor	Mechanical Works	3	X	√	X

No	Critical Job Title	Area	Level	LS	SS	S
		(Maintenance)				
52	Architect	Architectural Works (Damp & Water Proofing)	5	X	X	√
53	Assistant Architect	Architectural Works (Damp & Water Proofing)	4	X	X	√
54	Supervisor	Architectural Works (Damp & Water Proofing)	3	X	√	X
55	Installer	Architectural Works (Damp & Water Proofing)	2	X	√	X
56	General Worker	Architectural Works (Damp & Water Proofing)	1	√	X	X
57	Mechanical Engineer	Scaffolding	5	X	X	√
58	Assistant Mechanical Engineer	Scaffolding	4	X	X	√
59	Mechanical Supervisor	Scaffolding	3	X	√	X
60	Technician	Scaffolding	2	X	√	X
61	Mechanical Fitter	Scaffolding	1	√	X	X
62	BIM Modeller	External Works (Building Information Modelling (BIM))	4	X	X	√
63	Site Engineer	Subsurface Works (Horizontal Direct Drilling (HDD))	5	X	X	√
64	Assistant Site Engineer	Subsurface Works (Horizontal Direct Drilling (HDD))	4	X	X	√
65	Site Supervisor	Subsurface Works (Horizontal Direct Drilling (HDD))	3	X	√	X
66	Machine Operator	Subsurface Works (Horizontal Direct Drilling (HDD))	2	X	√	X
67	General Worker	Subsurface Works (Horizontal Direct Drilling (HDD))	1	√	X	X

LS – Low skilled worker

SS – Semi skilled worker

S – Skilled worker

ANNEX 5: LIST OF JOB RELATED TO IR 4.0

List of Job Related to IR4.0 for Specialized construction activities

No	Job related to IR4.0	Area	Level	LS	SS	S
1	Electrical Engineer	Electrical Works (Building Security Systems)	5	X	X	√
2	Assistant Electrical Engineer	Electrical Works (Building Security Systems)	4	X	X	√
3	Electrical Supervisor	Electrical Works (Building Security Systems)	3	X	√	X
4	Technician	Electrical Works (Building Security Systems)	2	X	√	X
5	Electrical Engineer	Electrical Works (Building Automated & Telemetry System)	5	X	X	√
6	Assistant Electrical Engineer	Electrical Works (Building Automated & Telemetry System)	4	X	X	√
7	Electrical Supervisor	Electrical Works (Building Automated & Telemetry System)	3	X	√	X
8	Technician	Electrical Works (Building Automated & Telemetry System)	2	X	√	X
9	Electrical Engineer	Electrical Works (Radio Frequency Protection (RFP) System)	5	X	X	√
10	Assistant Electrical Engineer	Electrical Works (Radio Frequency Protection (RFP) System)	4	X	X	√
11	Electrical Supervisor	Electrical Works (Radio Frequency Protection (RFP) System)	3	X	√	X
12	Technician	Electrical Works (Radio Frequency Protection (RFP) System)	2	X	√	X
13	Mechanical Engineer	Mechanical Works (Automated Building Elements)	5	X	X	√
14	Assistant Mechanical Engineer	Mechanical Works (Automated Building Elements)	4	X	X	√

No	Job related to IR4.0	Area	Level	LS	SS	S
15	Mechanical Supervisor	Mechanical Works (Automated Building Elements)	3	X	√	X
16	Technician	Mechanical Works (Automated Building Elements)	2	X	√	X
17	BIM Manager	External Works (Building Information Modelling (BIM))	6	X	X	√
18	BIM Engineer	External Works (Building Information Modelling (BIM))	5	X	X	√
19	BIM Modeller	External Works (Building Information Modelling (BIM))	4	X	X	√

LS – Low skilled worker

SS – Semi skilled worker

S – Skilled worker

ANNEX 6: OCCUPATIONAL DESCRIPTION (OD)

SECTION : (F) CONSTRUCTION

DIVISION : (43) SPECIALIZED CONSTRUCTION ACTIVITIES

GROUP : (431) DEMOLITION AND SITE PREPARATION

MSIC GROUP : 431

AREA : Soil Treatment

JOB TITLE : Site Engineer

LEVEL : 5

RESPONSIBILITIES:

The Site Engineer is responsible to plan, schedule, or coordinate soil treatment activities to meet deadlines; prepare project costing and request budget estimates; inspect or review project deliverables to monitor compliance with requirement; monitor work progress; plan and organize construction maintenance activities; interpret project brief to identify work sequence and appropriate construction method; interpret method statement to determine and monitor execution of procedure/work sequence for the project; prepare master work programme/ project milestone; direct and supervise construction contractor, sub-contractor or related worker; and develop or implement quality control and environmental protection programme.

Knowledges:

- Practical application of techniques, procedures, and equipment.
- Customer and personal services.
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Equipment, policies, procedures, and strategies

Skills:

- Plan, schedule, or coordinate soil treatment activities to meet deadlines
- Prepare project costing and request budget estimates
- Inspect or review project deliverables to monitor compliance with requirement
- Monitor work progress
- Plan and organize construction maintenance activities
- Interpret project brief to identify work sequence and appropriate construction method
- Interpret method statement to determine and monitor execution of procedure/work sequence for the project
- Prepare master work programme/ project milestone
- Direct and supervise construction contractor, sub-contractor or related worker
- Develop or implement quality control and environmental protection programme.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 431

AREA : Soil Treatment

JOB TITLE : Assistant Site Supervisor

LEVEL : 4

RESPONSIBILITIES:

The Assistant Site Engineer is responsible to assist the plan, schedule, or coordinate soil treatment activities to meet deadlines; assist the prepare project costing and request budget estimates; assist to inspect or review project deliverables to monitor compliance with requirement; assist to monitor work progress; assist the plan and organize construction maintenance activities; assist to interpret project brief to identify work sequence and appropriate construction method; assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project; assist the prepare master work programme/ project milestone; assist to direct and supervise construction contractor, sub-contractor or related worker; and assist to develop or implement quality control and environmental protection programme.

Knowledges:

- Practical application of techniques, procedures, and equipment.
- Customer and personal services.
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Equipment, policies, procedures, and strategies

Skills:

- Assist the plan, schedule, or coordinate soil treatment activities to meet deadlines
- Assist the prepare project costing and request budget estimates
- Assist to inspect or review project deliverables to monitor compliance with requirement
- Assist to monitor work progress
- Assist the plan and organize construction maintenance activities
- Assist to interpret project brief to identify work sequence and appropriate construction method
- Assist to interpret method statement to determine and monitor execution of procedure/ work sequence for the project
- Assist the prepare master work programme/ project milestone

- Assist to direct and supervise construction contractor, sub-contractor or related worker
- Assist to develop or implement quality control and environmental protection programme.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 431

AREA : Soil Treatment

JOB TITLE : Site Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Site Supervisor is responsible to prepare daily work schedule, coordinate and supervise for soil treatment activities; conduct site safety and induction briefing; assign work to employees based on job; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; coordinate work activities; monitor usage of equipment or construction sites to verify safety and specification are met; carry out regular work inspections; order or request materials; attend site meetings; compile site document or record to prepare report; Raise safety concerns and identify construction hazard and risk; supervise subordinate work; arrange for maintenance activities; perform subordinate appraisal; conduct training for construction methods, operation of machinery and equipment, site safety requirement; troubleshoot and rectify within work scope; and prepare reports for soil treatment activities

Knowledges:

- Raw materials, production processes, quality control, costs, and other techniques.
- Materials, methods, and the tools involved in the construction or repair.
- Principles and processes for providing customer and personal services.
- Production methods, and coordination of people and resources.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies, and procedures.
- English language competency.
- Principles and methods for curriculum and training design.
- Principles and procedures for personnel recruitment and personnel information systems.

Skills:

- Prepare daily work schedule, coordinate and supervise for soil treatment activities
- Conduct site safety and induction briefing; assign work to employees based on job
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; coordinate work activities

- Monitor usage of equipment or construction sites to verify safety and specification are met
- Carry out regular work inspections
- Order or request materials
- Attend site meetings
- Compile site document or record to prepare report
- Raise safety concerns and identify construction hazard and risk
- Supervise subordinate work; arrange for maintenance activities
- Perform subordinate appraisal; conduct training for construction methods
- Operation of machinery and equipment, site safety requirement; troubleshoot and rectify within work scope
- Prepare reports for soil treatment activities.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 431

AREA : Soil Treatment

JOB TITLE : Technician

LEVEL : 2

RESPONSIBILITIES:

The Technician is responsible to operate tools, equipment and machinery; carry out soil treatment works according to procedure and specification; carry out routine maintenance in accordance to routine schedule; perform loading and unloading activities of materials; perform housekeeping; and adhere to safety, health and environment regulation.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Principles and processes for providing customer and personal services
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies and procedures.

Skills:

- Operate tools, equipment and machinery
- Carry out soil treatment works according to procedure and specification
- Carry out routine maintenance in accordance to routine schedule
- Perform loading and unloading activities of materials
- Perform housekeeping
- Adhere to safety, health and environment regulation.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player

MSIC GROUP : 431

AREA : Soil Treatment

JOB TITLE : General Worker

LEVEL : 1

RESPONSIBILITIES:

The General Worker is responsible to prepare tools, equipment and machinery; prepare materials; assist site works according to instruction; assist routine maintenance in accordance to routine schedule; assist in materials loading and unloading activities; assist to measure, mark or record measurements; control the flow of traffic passing near, in or around work site; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- Materials, methods, and the tools involved in the construction.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies and procedures.
- English Language competency.

Skills:

- Prepare tools, equipment and machinery
- Prepare materials
- Assist site works according to instruction
- Assist routine maintenance in accordance to routine schedule
- Assist in materials loading and unloading activities
- Assist to measure, mark or record measurements
- Control the flow of traffic passing near, in or around work site
- Perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

SECTION : (F) CONSTRUCTION

DIVISION : (43) SPECIALIZED CONSTRUCTION ACTIVITIES

**GROUP : (432) ELECTRICAL, PLUMBING AND OTHER
CONSTRUCTION INSTALLATION ACTIVITIES**

MSIC GROUP : 432

AREA : Electrical Works – Solar Power Supply

JOB TITLE : Electrical Engineer

LEVEL : 5

RESPONSIBILITIES:

The Electrical Engineer is responsible to operate computer-assisted engineering or design software or equipment to perform engineering tasks; prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; consult engineers, customers, or others to discuss existing or potential engineering projects or products; design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements; compile data and write reports regarding existing or potential electrical engineering studies or projects; perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; prepare specifications for purchases of materials or equipment; estimate labour, material, or construction costs for budget preparation purposes; supervise or train project team members, as necessary; conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems; investigate customer or public complaints to determine the nature and extent of problems; oversee project production efforts to assure projects are completed on time and within budget; inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards; plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects; design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting; plan layout of electric power generating plants or distribution lines or stations and assist in developing capital project programmes for new equipment or major repairs.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.

- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and models
- English Language competency
- Know-how of raw materials, production processes, quality control, costs, and other techniques.

Skills:

- Operate computer-assisted engineering or design software or equipment to perform engineering tasks
- Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Consult engineers, customers, or others to discuss existing or potential engineering projects or products
- Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements
- Compile data and write reports regarding existing or potential electrical engineering studies or projects
- Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Prepare specifications for purchases of materials or equipment
- Estimate labour, material, or construction costs for budget preparation purposes
- Supervise or train project team members, as necessary
- Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems
- Investigate customer or public complaints to determine the nature and extent of problems
- Oversee project production efforts to assure projects are completed on time and within budget
- Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards;
- Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects
- Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting

- Plan layout of electric power generating plants or distribution lines or stations and assist in developing capital project programmes for new equipment or major repairs

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Electrical Works – Solar Power Supply

JOB TITLE : Assistant Electrical Engineer

LEVEL : 4

RESPONSIBILITIES:

The Assistant Electrical Engineer is responsible to assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products; assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements; assist to compile data and write reports regarding existing or potential electrical engineering studies or projects; assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; assist to prepare specifications for purchases of materials or equipment; assist to estimate labour, material, or construction costs for budget preparation purposes; assist to supervise or train project team members, as necessary; assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems; assist to investigate customer or public complaints to determine the nature and extent of problems; assist to oversee project production efforts to assure projects are completed on time and within budget; assist to inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards; assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects; assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting; and assist to plan layout of electric power generating plants or distribution lines or stations.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.

- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and models
- English Language competency
- Know-how of raw materials, production processes, quality control, costs, and other techniques.

Skills:

- Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products
- Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements
- Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects
- Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Assist to prepare specifications for purchases of materials or equipment
- Assist to estimate labour, material, or construction costs for budget preparation purposes
- Assist to supervise or train project team members, as necessary
- Assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems
- Assist to investigate customer or public complaints to determine the nature and extent of problems
- Assist to oversee project production efforts to assure projects are completed on time and within budget
- Assist to inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards
- Assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects
- Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting
- Assist to plan layout of electric power generating plants or distribution lines or stations

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Electrical Works – Solar Power Supply

JOB TITLE : Electrical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Electrical Supervisor is responsible to troubleshoot and rectify electrical problem within work scope; conduct site safety and induction briefing; assign work to employees based on job; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; coordinate work activities; monitor usage of equipment or construction sites to verify safety and specification are met; carry out regular work inspections; order or request materials; attend site meetings; compile site document or record to prepare report; Raise safety concerns and identify construction hazard and risk; supervise subordinate work; arrange and perform maintenance activities; perform subordinate appraisal; conduct training for solar power supply works, operation of machinery and equipment, site safety requirement; lead and manage wireman; and prepare reports for solar power supply.

Knowledges:

- Materials, methods, and the tools involved in the construction
- Machines and tools, including their designs, uses, repair, and maintenance.
- English language competency
- Know-how of relevant equipment, policies and procedures.
- Principles and processes for providing customer and personal services.
- Management principles

Skills:

- Troubleshoot and rectify electrical problem within work scope; conduct site safety and induction briefing
- Assign work to employees based on job
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement
- Coordinate work activities
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Carry out regular work inspections

- Order or request materials; attend site meetings
- Compile site document or record to prepare report
- Raise safety concerns and identify construction hazard and risk
- Supervise subordinate work
- Arrange and perform maintenance activities
- Perform subordinate appraisal
- Conduct training for solar power supply works, operation of machinery and equipment, site safety requirement
- Lead and manage wireman
- Prepare reports for solar power supply

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Electrical Works – Solar Power Supply

JOB TITLE : Technician

LEVEL : 2

RESPONSIBILITIES:

The Technician is responsible to operate tools, equipment and machinery; carry out solar power supply works according to procedure and specification; carry out routine maintenance in accordance to routine schedule; perform loading and unloading activities of materials; perform housekeeping; and adhere to safety, health and environment regulation.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Principles and processes for providing customer and personal services
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies and procedures.

Skills:

- Operate tools, equipment and machinery
- Carry out solar power supply works according to procedure and specification
- Carry out routine maintenance in accordance to routine schedule
- Perform loading and unloading activities of materials
- Perform housekeeping; adhere to safety, health and environment regulation.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player

MSIC GROUP : 432

AREA : Electrical Works – Solar Power Supply

JOB TITLE : Wireman

LEVEL : 1

RESPONSIBILITIES:

The Wireman is responsible to responsible prepare tools, equipment and machinery; prepare materials; assist site works according to instruction; assist routine maintenance in accordance to routine schedule; assist in materials loading and unloading activities; assist to measure, mark or record measurements; perform housekeeping; and adhere to safety health and environment regulation.

Knowledges:

- Types of tools, equipment and machinery
- Technical drawing standard, codes and symbols
- Equipment and machinery Act
- Company standard operating procedure
- Basic servicing and cleaning activities
- Hazard and risk identification

Skills:

- Prepare tools, equipment and machinery
- Prepare materials
- Assist site works according to instruction
- Assist routine maintenance in accordance to routine schedule
- Assist in materials loading and unloading activities
- Assist to measure, mark or record measurements
- Perform housekeeping

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 432

AREA : Electrical Works – Building Security Systems

JOB TITLE : Electrical Engineer

LEVEL : 5

RESPONSIBILITIES:

The Electrical Engineer is responsible to operate computer-assisted engineering or design software or equipment to perform engineering tasks; prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; consult engineers, customers, or others to discuss existing or potential engineering projects or products; design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements; compile data and write reports regarding existing or potential electrical engineering studies or projects; perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; prepare specifications for purchases of materials or equipment; estimate labour, material, or construction costs for budget preparation purposes; supervise or train project team members, as necessary; conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems; investigate customer or public complaints to determine the nature and extent of problems; oversee project production efforts to assure projects are completed on time and within budget; inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards; plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects; design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting; plan layout of electric power generating plants or distribution lines or stations and assist in developing capital project programmes for new equipment or major repairs.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.

- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and models
- English Language competency
- Know-how of raw materials, production processes, quality control, costs, and other techniques.

Skills:

- Operate computer-assisted engineering or design software or equipment to perform engineering tasks
- Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Consult engineers, customers, or others to discuss existing or potential engineering projects or products
- Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements
- Compile data and write reports regarding existing or potential electrical engineering studies or projects
- Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Prepare specifications for purchases of materials or equipment
- Estimate labour, material, or construction costs for budget preparation purposes
- Supervise or train project team members, as necessary
- Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems
- Investigate customer or public complaints to determine the nature and extent of problems
- Oversee project production efforts to assure projects are completed on time and within budget
- Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards;
- Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects
- Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting

- Plan layout of electric power generating plants or distribution lines or stations and assist in developing capital project programmes for new equipment or major repairs

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Concern on environmental issues
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Electrical Works – Building Security Systems

JOB TITLE : Assistant Electrical Engineer

LEVEL : 4

RESPONSIBILITIES:

The Assistant Electrical Engineer is responsible to assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products; assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements; assist to compile data and write reports regarding existing or potential electrical engineering studies or projects; assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; assist to prepare specifications for purchases of materials or equipment; assist to estimate labour, material, or construction costs for budget preparation purposes; assist to supervise or train project team members, as necessary; assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems; assist to investigate customer or public complaints to determine the nature and extent of problems; assist to oversee project production efforts to assure projects are completed on time and within budget; assist to inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards; assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects; assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting; and assist to plan layout of electric power generating plants or distribution lines or stations.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.

- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and models
- English Language competency
- Know-how of raw materials, production processes, quality control, costs, and other techniques.

Skills:

- Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products
- Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements
- Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects
- Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Assist to prepare specifications for purchases of materials or equipment
- Assist to estimate labour, material, or construction costs for budget preparation purposes
- Assist to supervise or train project team members, as necessary
- Assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems
- Assist to investigate customer or public complaints to determine the nature and extent of problems
- Assist to oversee project production efforts to assure projects are completed on time and within budget
- Assist to inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards
- Assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects
- Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting
- Assist to plan layout of electric power generating plants or distribution lines or stations

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Electrical Works – Building Security Systems

JOB TITLE : Electrical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Electrical Supervisor is responsible to troubleshoot and rectify electrical problem within work scope; conduct site safety and induction briefing; assign work to employees based on job; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; coordinate work activities; monitor usage of equipment or construction sites to verify safety and specification are met; carry out regular work inspections; order or request materials; attend site meetings; compile site document or record to prepare report; Raise safety concerns and identify construction hazard and risk; supervise subordinate work; arrange and perform maintenance activities; perform subordinate appraisal; conduct training for building security system works, operation of machinery and equipment, site safety requirement; lead and manage wireman; and prepare reports for building security system.

Knowledges:

- Materials, methods, and the tools involved in the construction
- Machines and tools, including their designs, uses, repair, and maintenance.
- English language competency
- Know-how of relevant equipment, policies and procedures.
- Principles and processes for providing customer and personal services.
- Management principles

Skills:

- Troubleshoot and rectify electrical problem within work scope; conduct site safety and induction briefing
- Assign work to employees based on job
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement
- Coordinate work activities
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Carry out regular work inspections

- Order or request materials; attend site meetings
- Compile site document or record to prepare report
- Raise safety concerns and identify construction hazard and risk
- Supervise subordinate work
- Arrange and perform maintenance activities
- Perform subordinate appraisal
- Conduct training for solar power supply works, operation of machinery and equipment, site safety requirement
- Lead and manage wireman
- Prepare reports for solar power supply

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Electrical Works – Building Security Systems

JOB TITLE : Technician

LEVEL : 2

Responsibilities:

The Technician is responsible to operate tools, equipment and machinery; carry out building security system works according to procedure and specification; carry out routine maintenance in accordance to routine schedule; perform loading and unloading activities of materials; perform housekeeping; and adhere to safety, health and environment regulation.

Knowledges:

- Practical application includes applying techniques, procedures, and equipment.
- Principles and processes for providing customer and personal services
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies and procedures.

Skills:

- Operate tools, equipment and machinery.
- Carry out building security system works according to procedure and specification.
- Carry out routine maintenance in accordance to routine schedule.
- Load and unload activities of materials.
- Perform housekeeping.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 432

AREA : Electrical Works – Building Security Systems

JOB TITLE : Wireman

LEVEL : 1

RESPONSIBILITIES:

The Wireman is responsible to prepare tools, equipment and machinery; prepare materials; assist site works according to instruction; assist routine maintenance in accordance to routine schedule; assist in materials loading and unloading activities; assist to measure, mark or record measurements; perform housekeeping; and adhere to safety health and environment regulation.

Knowledges:

- Types of tools, equipment and machinery
- Technical drawing standard, codes and symbols
- Equipment and machinery Act
- Company standard operating procedure
- Basic servicing and cleaning activities
- Hazard and risk identification

Skills:

- Prepare tools, equipment and machinery
- Prepare materials
- Assist site works according to instruction
- Assist routine maintenance in accordance to routine schedule
- Assist in materials loading and unloading activities
- Assist to measure, mark or record measurements
- Perform housekeeping

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 432

AREA : Electrical Works – Building Automated & Telemetry System

JOB TITLE : Electrical Engineer

LEVEL : 5

RESPONSIBILITIES:

The Electrical Engineer is responsible to operate computer-assisted engineering or design software or equipment to perform engineering tasks; prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; consult engineers, customers, or others to discuss existing or potential engineering projects or products; design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements; compile data and write reports regarding existing or potential electrical engineering studies or projects; perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; prepare specifications for purchases of materials or equipment; estimate labour, material, or construction costs for budget preparation purposes; supervise or train project team members, as necessary; conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems; investigate customer or public complaints to determine the nature and extent of problems; oversee project production efforts to assure projects are completed on time and within budget; inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards; plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects; design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting; plan layout of electric power generating plants or distribution lines or stations and assist in developing capital project programmes for new equipment or major repairs.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.

- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and models
- English Language competency
- Know-how of raw materials, production processes, quality control, costs, and other techniques.

Skills:

- Operate computer-assisted engineering or design software or equipment to perform engineering tasks
- Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Consult engineers, customers, or others to discuss existing or potential engineering projects or products
- Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements
- Compile data and write reports regarding existing or potential electrical engineering studies or projects
- Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Prepare specifications for purchases of materials or equipment
- Estimate labour, material, or construction costs for budget preparation purposes
- Supervise or train project team members, as necessary
- Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems
- Investigate customer or public complaints to determine the nature and extent of problems
- Oversee project production efforts to assure projects are completed on time and within budget
- Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards;
- Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects
- Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting

- Plan layout of electric power generating plants or distribution lines or stations and assist in developing capital project programmes for new equipment or major repairs

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Electrical Works – Building Automated & Telemetry System

JOB TITLE : Assistant Electrical Engineer

LEVEL : 4

RESPONSIBILITIES:

The Assistant Electrical Engineer is responsible to assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products; assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements; assist to compile data and write reports regarding existing or potential electrical engineering studies or projects; assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; assist to prepare specifications for purchases of materials or equipment; assist to estimate labour, material, or construction costs for budget preparation purposes; assist to supervise or train project team members, as necessary; assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems; assist to investigate customer or public complaints to determine the nature and extent of problems; assist to oversee project production efforts to assure projects are completed on time and within budget; assist to inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards; assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects; assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting; and assist to plan layout of electric power generating plants or distribution lines or stations.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.

- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and models
- English Language competency
- Know-how of raw materials, production processes, quality control, costs, and other techniques.

Skills:

- Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Assist to consult engineers, customers, or others to discuss existing or potential engineering projects or products
- Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Assist to direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements
- Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects
- Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Assist to prepare specifications for purchases of materials or equipment
- Assist to estimate labour, material, or construction costs for budget preparation purposes
- Assist to supervise or train project team members, as necessary
- Assist to conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems
- Assist to investigate customer or public complaints to determine the nature and extent of problems
- Assist to oversee project production efforts to assure projects are completed on time and within budget
- Assist to inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards
- Assist to plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects
- Assist to design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting
- Assist to plan layout of electric power generating plants or distribution lines or stations

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Electrical Works – Building Automated & Telemetry System

JOB TITLE : Electrical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Electrical Supervisor is responsible to troubleshoot and rectify electrical problem within work scope; conduct site safety and induction briefing; assign work to employees based on job; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; coordinate work activities; monitor usage of equipment or construction sites to verify safety and specification are met; carry out regular work inspections; order or request materials; attend site meetings; compile site document or record to prepare report; Raise safety concerns and identify construction hazard and risk; supervise subordinate work; arrange and perform maintenance activities; perform subordinate appraisal; conduct training for building automated & telemetry system works, operation of machinery and equipment, site safety requirement; lead and manage wireman; and prepare reports for building automated & telemetry system.

Knowledges:

- Materials, methods, and the tools involved in the construction
- Machines and tools, including their designs, uses, repair, and maintenance.
- English language competency
- Know-how of relevant equipment, policies and procedures.
- Principles and processes for providing customer and personal services.
- Management principles

Skills:

- Troubleshoot and rectify electrical problem within work scope; conduct site safety and induction briefing
- Assign work to employees based on job
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement
- Coordinate work activities
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Carry out regular work inspections

- Order or request materials; attend site meetings
- Compile site document or record to prepare report
- Raise safety concerns and identify construction hazard and risk
- Supervise subordinate work
- Arrange and perform maintenance activities
- Perform subordinate appraisal
- Conduct training for solar power supply works, operation of machinery and equipment, site safety requirement
- Lead and manage wireman
- Prepare reports for solar power supply

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Electrical Works – Building Automated & Telemetry System

JOB TITLE : Technician

LEVEL : 2

RESPONSIBILITIES:

The Technician is responsible to operate tools, equipment and machinery; carry out building automated & telemetry system works according to procedure and specification; carry out routine maintenance in accordance to routine schedule; perform loading and unloading activities of materials; perform housekeeping; and adhere to safety, health and environment regulation.

Knowledges:

- Practical application includes applying techniques, procedures, and equipment.
- Principles and processes for providing customer and personal services
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies and procedures.

Skills:

- Operate tools, equipment and machinery.
- Carry out building security system works according to procedure and specification.
- Carry out routine maintenance in accordance to routine schedule.
- Load and unload activities of materials.
- Perform housekeeping.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 432

AREA : Electrical Works – Building Automated & Telemetry System

JOB TITLE : Wireman

LEVEL : 1

Responsibilities:

The Wireman is responsible to prepare tools, equipment and machinery; prepare materials; assist site works according to instruction; assist routine maintenance in accordance to routine schedule; assist in materials loading and unloading activities; assist to measure, mark or record measurements; perform housekeeping; and adhere to safety health and environment regulation.

Knowledges:

- Types of tools, equipment and machinery
- Technical drawing standard, codes and symbols
- Equipment and machinery Act
- Company standard operating procedure
- Basic servicing and cleaning activities
- Hazard and risk identification

Skills:

- Prepare tools, equipment and machinery
- Prepare materials
- Assist site works according to instruction
- Assist routine maintenance in accordance to routine schedule
- Assist in materials loading and unloading activities
- Assist to measure, mark or record measurements
- Perform housekeeping

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 432

AREA : Plumbing Works – Solar Heating System

JOB TITLE : Mechanical Engineer

LEVEL : 5

RESPONSIBILITIES:

The Mechanical Engineer is responsible to operate computer-assisted engineering or design software or equipment to perform engineering tasks; prepare technical drawings, specifications of plumbing systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; consult engineers, customers, or others to discuss existing or potential engineering projects or products; design, implement, maintain, or improve plumbing instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements; compile data and write reports regarding existing or potential mechanical engineering studies or projects; perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; prepare specifications for purchases of materials or equipment; estimate labour, material, or construction costs for budget preparation purposes; supervise or train project team members, as necessary; conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems; investigate customer or public complaints to determine the nature and extent of problems; oversee project production efforts to assure projects are completed on time and within budget; inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards; plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects; design electrical systems or components that minimize electric energy requirements; and assist in developing capital project programmes for new equipment or major repairs.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and modals.
- Machines and tools, including their designs, uses, repair, and maintenance
- English language competency

- Computer hardware and software, including applications and programming.
- Raw materials, production processes, quality control, costs.
- Principles and processes for providing customer and personal services
- Management principles involved in strategic planning, resource allocation, human resources modelling, leadership technique, production methods, and coordination of people and resources.

Skills:

- Operate computer-assisted engineering or design software or equipment to perform engineering tasks
- Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Consult engineers, customers, or others to discuss existing or potential engineering projects or products
- Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements
- Compile data and write reports regarding existing or potential electrical engineering studies or projects
- Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Prepare specifications for purchases of materials or equipment
- Estimate labour, material, or construction costs for budget preparation purposes
- Supervise or train project team members, as necessary
- Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems
- Investigate customer or public complaints to determine the nature and extent of problems
- Oversee project production efforts to assure projects are completed on time and within budget
- Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards;
- Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects
- Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting

- Plan layout of electric power generating plants or distribution lines or stations and assist in developing capital project programmes for new equipment or major repairs

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Plumbing Works – Solar Heating System

JOB TITLE : Assistant Mechanical Engineer

LEVEL : 4

RESPONSIBILITIES:

The Assistant Mechanical Engineer is responsible to assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; assist to compile data and write reports regarding existing or potential electrical engineering studies or projects; assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; assist to prepare specifications for purchases of materials or equipment; assist to supervise or train project team members, as necessary; conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems: and identify and compile customer or public complaints to determine the nature and extent of problems.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and modals.
- Machines and tools, including their designs, uses, repair, and maintenance
- English language competency
- Computer hardware and software, including applications and programming.
- Raw materials, production processes, quality control, costs.
- Principles and processes for providing customer and personal services
- Management principles involved in strategic planning, resource allocation, human resources modelling, leadership technique, production methods, and coordination of people and resources.

Skills:

- Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects
- Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Assist to prepare specifications for purchases of materials or equipment; assist to supervise or train project team members, as necessary
- Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problem
- Identify and compile customer or public complaints to determine the nature and extent of problems

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Plumbing Works – Solar Heating System

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and programme
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Plumbing Works – Solar Heating System

JOB TITLE : Technician

LEVEL : 2

RESPONSIBILITIES:

The Technician is responsible to operate tools, equipment and machinery; carry out solar heating system works according to procedure and specification; carry out routine maintenance in accordance to routine schedule; perform loading and unloading activities of materials; perform housekeeping; and adhere to safety, health and environment regulation.

Knowledges:

- Practical application includes applying techniques, procedures, and equipment.
- Principles and processes for providing customer and personal services
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies and procedures.

Skills:

- Operate tools, equipment and machinery.
- Carry out building security system works according to procedure and specification.
- Carry out routine maintenance in accordance to routine schedule.
- Load and unload activities of materials.
- Perform housekeeping.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 432

AREA : Plumbing Works – Solar Heating System

JOB TITLE : Pipe Fitter

LEVEL : 1

RESPONSIBILITIES:

The Pipe Fitter is responsible to interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required; measure and mark surfaces to lay out work, according to drawings; prepare and operate tools, equipment and machinery; prepare materials; attach pipes to walls, structures, or fixtures; prepare equipment for pipe testing; assist site works according to instruction; assist routine maintenance in accordance to routine schedule; assist in materials loading and unloading activities; assist to measure, mark or record measurements; perform housekeeping; and adhere to safety health and environment regulation.

Knowledges:

- Machines and tools, including their designs, uses, repair, and maintenance.
- Materials, methods, and the tools involved in the construction
- English language competency
- Know-how of relevant equipment, policies and procedures.
- Practical application includes techniques, procedures, and equipment.

Skills:

- Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required
- Measure and mark surfaces to lay out work, according to drawings
- Prepare materials and operate tools, equipment and machinery
- Hack surface and install piping for air-conditioning and refrigeration system; attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system
- Prepare air-conditioning and refrigeration system for testing; assist site works according to instruction
- Assist routine maintenance in accordance to routine schedule
- Assist in materials loading and unloading activities
- Assist to measure, mark or record measurements
- Perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Air-Conditioning & Refrigeration System

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Ventilation System

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Heating System

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Fire Protection System

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Pumping System

JOB TITLE : Mechanical Engineer

LEVEL : 5

RESPONSIBILITIES:

The Mechanical Engineer is responsible to operate computer-assisted engineering or design software or equipment to perform engineering tasks; prepare technical drawings, specifications of mechanical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; consult engineers, customers, or others to discuss existing or potential engineering projects or products; design, implement, maintain, or improve mechanical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements; compile data and write reports regarding existing or potential mechanical engineering studies or projects; perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; prepare specifications for purchases of materials or equipment; estimate labour, material, or construction costs for budget preparation purposes; supervise or train project team members, as necessary; conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems; investigate customer or public complaints to determine the nature and extent of problems; oversee project production efforts to assure projects are completed on time and within budget; inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards; plan or implement research methodology or procedures to apply principles of mechanical theory to engineering projects; design mechanical systems or components that minimize electric energy requirements; and assist in developing capital project programmes for new equipment or major repairs.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and modals.
- Machines and tools, including their designs, uses, repair, and maintenance
- English language competency

- Computer hardware and software, including applications and programming.
- Raw materials, production processes, quality control, costs.
- Principles and processes for providing customer and personal services
- Management principles involved in strategic planning, resource allocation, human resources modelling, leadership technique, production methods, and coordination of people and resources.

Skills:

- Operate computer-assisted engineering or design software or equipment to perform engineering tasks
- Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Consult engineers, customers, or others to discuss existing or potential engineering projects or products
- Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements
- Compile data and write reports regarding existing or potential electrical engineering studies or projects
- Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Prepare specifications for purchases of materials or equipment
- Estimate labour, material, or construction costs for budget preparation purposes
- Supervise or train project team members, as necessary
- Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems
- Investigate customer or public complaints to determine the nature and extent of problems
- Oversee project production efforts to assure projects are completed on time and within budget
- Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards;
- Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects
- Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting

- Plan layout of electric power generating plants or distribution lines or stations and assist in developing capital project programmes for new equipment or major repairs

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Pumping System

JOB TITLE : Assistant Mechanical Engineer

LEVEL : 4

RESPONSIBILITIES:

The Assistance Mechanical Engineer is responsible to assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; assist to compile data and write reports regarding existing or potential electrical engineering studies or projects; assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; assist to prepare specifications for purchases of materials or equipment; assist to supervise or train project team members, as necessary; conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems; and identify and compile customer or public complaints to determine the nature and extent of problems.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and modals.
- Machines and tools, including their designs, uses, repair, and maintenance
- English language competency
- Computer hardware and software, including applications and programming.
- Raw materials, production processes, quality control, costs.
- Principles and processes for providing customer and personal services
- Management principles involved in strategic planning, resource allocation, human resources modelling, leadership technique, production methods, and coordination of people and resources.

Skills:

- Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects
- Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Assist to prepare specifications for purchases of materials or equipment; assist to supervise or train project team members, as necessary
- Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problem
- Identify and compile customer or public complaints to determine the nature and extent of problems

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Pumping System

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Pumping System

JOB TITLE : Technician

LEVEL : 2

RESPONSIBILITIES:

The Technician is responsible to operate tools, equipment and machinery; carry out pumping system works according to procedure and specification; carry out routine maintenance in accordance to routine schedule; perform loading and unloading activities of materials; perform housekeeping; and adhere to safety, health and environment regulation.

Knowledges:

- Practical application includes applying techniques, procedures, and equipment.
- Principles and processes for providing customer and personal services
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies and procedures.

Skills:

- Operate tools, equipment and machinery.
- Carry out building security system works according to procedure and specification.
- Carry out routine maintenance in accordance to routine schedule.
- Load and unload activities of materials.
- Perform housekeeping.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Pumping System

JOB TITLE : Mechanical Fitter

LEVEL : 1

RESPONSIBILITIES:

The Mechanical Fitter is responsible to interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required; measure and mark surfaces to lay out work, according to drawings; prepare and operate tools, equipment and machinery; prepare materials; hack surface and install piping for air-conditioning and refrigeration system; attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system; prepare air-conditioning and refrigeration system for testing; assist site works according to instruction; assist routine maintenance in accordance to routine schedule; assist in materials loading and unloading activities; assist to measure, mark or record measurements; perform housekeeping; and adhere to safety health and environment regulation.

Knowledges:

- Machines and tools, including their designs, uses, repair, and maintenance.
- Materials, methods, and the tools involved in the construction
- English language competency
- Know-how of relevant equipment, policies and procedures.
- Practical application includes techniques, procedures, and equipment.

Skills:

- Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required
- Measure and mark surfaces to lay out work, according to drawings
- Prepare materials and operate tools, equipment and machinery
- Hack surface and install piping for air-conditioning and refrigeration system; attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system
- Prepare air-conditioning and refrigeration system for testing; assist site works according to instruction
- Assist routine maintenance in accordance to routine schedule
- Assist in materials loading and unloading activities
- Assist to measure, mark or record measurements

- Perform housekeeping

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Gas Piping System

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Thermal Insulation

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Sound & Vibration Insulation

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Elevator System

JOB TITLE : Mechanical Engineer

LEVEL : 5

RESPONSIBILITIES:

The Mechanical Engineer is responsible to operate computer-assisted engineering or design software or equipment to perform engineering tasks; prepare technical drawings, specifications of mechanical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; consult engineers, customers, or others to discuss existing or potential engineering projects or products; design, implement, maintain, or improve mechanical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements; compile data and write reports regarding existing or potential mechanical engineering studies or projects; perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; prepare specifications for purchases of materials or equipment; estimate labour, material, or construction costs for budget preparation purposes; supervise or train project team members, as necessary; conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems; investigate customer or public complaints to determine the nature and extent of problems; oversee project production efforts to assure projects are completed on time and within budget; inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards; plan or implement research methodology or procedures to apply principles of mechanical theory to engineering projects; design mechanical systems or components that minimize electric energy requirements; and assist in developing capital project programmes for new equipment or major repairs.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and modals.
- Machines and tools, including their designs, uses, repair, and maintenance
- English language competency

- Computer hardware and software, including applications and programming.
- Raw materials, production processes, quality control, costs.
- Principles and processes for providing customer and personal services
- Management principles involved in strategic planning, resource allocation, human resources modelling, leadership technique, production methods, and coordination of people and resources.

Skills:

- Operate computer-assisted engineering or design software or equipment to perform engineering tasks
- Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Consult engineers, customers, or others to discuss existing or potential engineering projects or products
- Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements
- Compile data and write reports regarding existing or potential electrical engineering studies or projects
- Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Prepare specifications for purchases of materials or equipment
- Estimate labour, material, or construction costs for budget preparation purposes
- Supervise or train project team members, as necessary
- Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems
- Investigate customer or public complaints to determine the nature and extent of problems
- Oversee project production efforts to assure projects are completed on time and within budget
- Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards;
- Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects
- Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting

- Plan layout of electric power generating plants or distribution lines or stations and assist in developing capital project programmes for new equipment or major repairs

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Elevator System

JOB TITLE : Assistant Mechanical Engineer

LEVEL : 4

RESPONSIBILITIES:

The Assistant Mechanical Engineer is responsible to assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; assist to compile data and write reports regarding existing or potential electrical engineering studies or projects; assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; assist to prepare specifications for purchases of materials or equipment; assist to supervise or train project team members, as necessary; conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems: and identify and compile customer or public complaints to determine the nature and extent of problems.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and modals.
- Machines and tools, including their designs, uses, repair, and maintenance
- English language competency
- Computer hardware and software, including applications and programming.
- Raw materials, production processes, quality control, costs.
- Principles and processes for providing customer and personal services
- Management principles involved in strategic planning, resource allocation, human resources modelling, leadership technique, production methods, and coordination of people and resources.

Skills:

- Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects
- Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Assist to prepare specifications for purchases of materials or equipment; assist to supervise or train project team members, as necessary
- Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problem
- Identify and compile customer or public complaints to determine the nature and extent of problems

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Elevator System

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Elevator System

JOB TITLE : Technician

LEVEL : 2

RESPONSIBILITIES:

The Technician is responsible to operate tools, equipment and machinery; carry out elevator system works according to procedure and specification; carry out routine maintenance in accordance to routine schedule; perform loading and unloading activities of materials; perform housekeeping; and adhere to safety, health and environment regulation.

Knowledges:

- Practical application includes applying techniques, procedures, and equipment.
- Principles and processes for providing customer and personal services
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies and procedures.

Skills:

- Operate tools, equipment and machinery.
- Carry out building security system works according to procedure and specification.
- Carry out routine maintenance in accordance to routine schedule.
- Load and unload activities of materials.
- Perform housekeeping.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Elevator System

JOB TITLE : Mechanical Fitter

LEVEL : 1

RESPONSIBILITIES:

The Mechanical Fitter is responsible to interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required; measure and mark surfaces to lay out work, according to drawings; prepare and operate tools, equipment and machinery; prepare materials; hack surface and install piping for air-conditioning and refrigeration system; attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system; prepare air-conditioning and refrigeration system for testing; assist site works according to instruction; assist routine maintenance in accordance to routine schedule; assist in materials loading and unloading activities; assist to measure, mark or record measurements; perform housekeeping; and adhere to safety health and environment regulation.

Knowledges:

- Machines and tools, including their designs, uses, repair, and maintenance.
- Materials, methods, and the tools involved in the construction
- English language competency
- Know-how of relevant equipment, policies and procedures.
- Practical application includes techniques, procedures, and equipment.

Skills:

- Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required
- Measure and mark surfaces to lay out work, according to drawings
- Prepare materials and operate tools, equipment and machinery
- Hack surface and install piping for air-conditioning and refrigeration system; attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system
- Prepare air-conditioning and refrigeration system for testing; assist site works according to instruction
- Assist routine maintenance in accordance to routine schedule
- Assist in materials loading and unloading activities
- Assist to measure, mark or record measurements

- Perform housekeeping

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Escalator & Travellator System

JOB TITLE : Mechanical Engineer

LEVEL : 5

RESPONSIBILITIES:

The Mechanical Engineer is responsible to operate computer-assisted engineering or design software or equipment to perform engineering tasks; prepare technical drawings, specifications of mechanical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; consult engineers, customers, or others to discuss existing or potential engineering projects or products; design, implement, maintain, or improve mechanical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements; compile data and write reports regarding existing or potential mechanical engineering studies or projects; perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; prepare specifications for purchases of materials or equipment; estimate labour, material, or construction costs for budget preparation purposes; supervise or train project team members, as necessary; conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems; investigate customer or public complaints to determine the nature and extent of problems; oversee project production efforts to assure projects are completed on time and within budget; inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards; plan or implement research methodology or procedures to apply principles of mechanical theory to engineering projects; design mechanical systems or components that minimize electric energy requirements; and assist in developing capital project programmes for new equipment or major repairs.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and modals.
- Machines and tools, including their designs, uses, repair, and maintenance
- English language competency

- Computer hardware and software, including applications and programming.
- Raw materials, production processes, quality control, costs.
- Principles and processes for providing customer and personal services
- Management principles involved in strategic planning, resource allocation, human resources modelling, leadership technique, production methods, and coordination of people and resources.

Skills:

- Operate computer-assisted engineering or design software or equipment to perform engineering tasks
- Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Consult engineers, customers, or others to discuss existing or potential engineering projects or products
- Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements
- Compile data and write reports regarding existing or potential electrical engineering studies or projects
- Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Prepare specifications for purchases of materials or equipment
- Estimate labour, material, or construction costs for budget preparation purposes
- Supervise or train project team members, as necessary
- Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems
- Investigate customer or public complaints to determine the nature and extent of problems
- Oversee project production efforts to assure projects are completed on time and within budget
- Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards;
- Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects
- Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting

- Plan layout of electric power generating plants or distribution lines or stations and assist in developing capital project programmes for new equipment or major repairs

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Escalator & Travellator System

JOB TITLE : Assistant Mechanical Engineer

LEVEL : 4

RESPONSIBILITIES:

The Assistant Mechanical Engineer is responsible to assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; assist to compile data and write reports regarding existing or potential electrical engineering studies or projects; assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; assist to prepare specifications for purchases of materials or equipment; assist to supervise or train project team members, as necessary; conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems: and identify and compile customer or public complaints to determine the nature and extent of problems.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and modals.
- Machines and tools, including their designs, uses, repair, and maintenance
- English language competency
- Computer hardware and software, including applications and programming.
- Raw materials, production processes, quality control, costs.
- Principles and processes for providing customer and personal services
- Management principles involved in strategic planning, resource allocation, human resources modelling, leadership technique, production methods, and coordination of people and resources.

Skills:

- Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects
- Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Assist to prepare specifications for purchases of materials or equipment; assist to supervise or train project team members, as necessary
- Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problem
- Identify and compile customer or public complaints to determine the nature and extent of problems

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Escalator & Travellator System

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Escalator & Travellator System

JOB TITLE : Technician

LEVEL : 2

RESPONSIBILITIES:

The Technician is responsible to operate tools, equipment and machinery; carry out escalator and traveller system works according to procedure and specification; carry out routine maintenance in accordance to routine schedule; perform loading and unloading activities of materials; perform housekeeping; and adhere to safety, health and environment regulation.

Knowledges:

- Practical application includes applying techniques, procedures, and equipment.
- Principles and processes for providing customer and personal services
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies and procedures.

Skills:

- Operate tools, equipment and machinery.
- Carry out building security system works according to procedure and specification.
- Carry out routine maintenance in accordance to routine schedule.
- Load and unload activities of materials.
- Perform housekeeping.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Escalator & Travellator System

JOB TITLE : Mechanical Fitter

LEVEL : 1

RESPONSIBILITIES:

The Mechanical Fitter is responsible to interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required; measure and mark surfaces to lay out work, according to drawings; prepare and operate tools, equipment and machinery; prepare materials; hack surface and install piping for air-conditioning and refrigeration system; attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system; prepare air-conditioning and refrigeration system for testing; assist site works according to instruction; assist routine maintenance in accordance to routine schedule; assist in materials loading and unloading activities; assist to measure, mark or record measurements; perform housekeeping; and adhere to safety health and environment regulation.

Knowledges:

- Machines and tools, including their designs, uses, repair, and maintenance.
- Materials, methods, and the tools involved in the construction
- English language competency
- Know-how of relevant equipment, policies and procedures.
- Practical application includes techniques, procedures, and equipment.

Skills:

- Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required
- Measure and mark surfaces to lay out work, according to drawings
- Prepare materials and operate tools, equipment and machinery
- Hack surface and install piping for air-conditioning and refrigeration system; attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system
- Prepare air-conditioning and refrigeration system for testing; assist site works according to instruction
- Assist routine maintenance in accordance to routine schedule
- Assist in materials loading and unloading activities
- Assist to measure, mark or record measurements

- Perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Automated Building Element

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Vacuum Cleaning System

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Building Dehumidification System

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 432

AREA : Mechanical Works – Maintenance

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

SECTION : (F) CONSTRUCTION

DIVISION : (43) SPECIALIZED CONSTRUCTION ACTIVITIES

GROUP : (433) BUILDING COMPLETION AND FINISHING

MSIC GROUP : 433

AREA : Damp & Water Proofing

JOB TITLE : Architect

LEVEL : 5

RESPONSIBILITIES:

The Architect is responsible to manage the coordination and overall integration of architectural works to meet deadlines; review and propose for design changes; interpret method statement to determine and monitor execution of procedure/work sequence for the project; consult management, production on project specifications or procedures; proposal presentation, findings and preparation of reports to clients; prepare of project specifications; prepare budget preparation and cost estimation; conduct the recruitment, placement, and evaluation process of architecture staff; plan or monitor the work progress for installation and testing; inspect or review project deliverables to monitor compliance with requirement; develop or implement quality control and environmental protection programme; and perform general administrative functions.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.
- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and models
- English Language competency
- Know-how of raw materials, production processes, quality control, costs, and other techniques.

Skills:

- Manage the coordination and overall integration of architectural works to meet deadlines
- Review and propose for design changes
- Interpret method statement to determine and monitor execution of procedure/work sequence for the project
- Consult management, production on project specifications or procedures
- Proposal presentation, findings and preparation of reports to clients

- Prepare of project specifications
- Prepare budget preparation and cost estimation
- Conduct the recruitment, placement, and evaluation process of architecture staff; plan or monitor the work progress for installation and testing
- Inspect or review project deliverables to monitor compliance with requirement
- Develop or implement quality control and environmental protection programme
- Perform general administrative functions

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 433

AREA : Damp & Water Proofing

JOB TITLE : Assistant Architect

LEVEL : 4

RESPONSIBILITIES:

The Assistant Architect is responsible to assist the coordination and overall integration of architectural works to meet deadlines; assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project; assist in proposal presentation, findings and preparation of reports to clients; assist in preparation of project specifications; assist in budget preparation and cost estimation; assist in recruitment, placement, and evaluation process of architecture staff; assist in plan or monitor the work progress for installation and testing; assist to inspect or review project deliverables to monitor compliance with requirement; assist to develop or implement quality control and environmental protection programme; and comply with architectural guidelines and standards.

Knowledges:

- Practical application of techniques, procedures, and equipment.
- Customer and personal services.
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Equipment, policies, procedures, and strategies

Skills:

- Assist the coordination and overall integration of architectural works to meet deadlines
- Assist to interpret method statement to determine and monitor execution of procedure/ work sequence for the project
- Assist in proposal presentation, findings and preparation of reports to clients
- Assist in preparation of project specifications
- Assist in budget preparation and cost estimation
- Assist in recruitment, placement, and evaluation process of architecture staff; assist in plan or monitor the work progress for installation and testing
- Assist to inspect or review project deliverables to monitor compliance with requirement

- Assist to develop or implement quality control and environmental protection programme
- Comply with architectural guidelines and standards.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 433

AREA : Damp & Water Proofing

JOB TITLE : Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Supervisor is responsible to troubleshoot and rectify problem within work scope; conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; coordinate work activities; monitor usage of equipment or construction sites to verify safety and specification are met; order or request materials; supervise subordinate work; arrange and perform maintenance activities; conduct training for installation works, operation of machinery and equipment, site safety requirement; and prepare reports for architectural works.

Knowledges:

- Materials, methods, and the tools involved in the construction
- Machines and tools, including their designs, uses, repair, and maintenance.
- English language competency
- Know-how of relevant equipment, policies and procedures.
- Principles and processes for providing customer and personal services.
- Management principles

Skills:

- Troubleshoot and rectify problem within work scope
- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement
- Coordinate work activities
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Order or request materials
- Supervise subordinate work
- Arrange and perform maintenance activities
- Conduct training for installation works, operation of machinery and equipment, site safety requirement

- Prepare reports for architectural works

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 433

AREA : Damp & Water Proofing

JOB TITLE : Installer

LEVEL : 2

RESPONSIBILITIES:

The Installer is responsible to read construction/shop drawing or other specifications to determine methods of installation and tool requirements; measure and mark surfaces to lay out work, according to drawings; operate tools, equipment and machinery; carry out assembling or installation architectural work according to instruction and drawing; perform inspections and testing work; comply with architectural guidelines and standards; liaise with supervisor to carry out architectural work; perform housekeeping and adhere to safety, health and environment regulation.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Principles and processes for providing customer and personal services
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies and procedures.

Skills:

- Read construction/shop drawing or other specifications to determine methods of installation and tool requirements
- Measure and mark surfaces to lay out work, according to drawings; operate tools
- Equipment and machinery
- Carry out assembling or installation architectural work according to instruction and drawing
- Perform inspections and testing work
- Comply with architectural guidelines and standards
- Liaise with supervisor to carry out architectural work
- Perform housekeeping
- Adhere to safety, health and environment regulation..

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 433

AREA : Damp & Water Proofing

JOB TITLE : General Worker

LEVEL : 1

RESPONSIBILITIES:

The General Worker is responsible to prepare tools, equipment and machinery; prepare materials; assist site works according to instruction; assist routine maintenance in accordance to routine schedule; assist in materials loading and unloading activities; assist to measure, mark or record measurements; control the flow of traffic passing near, in or around work site; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- Materials, methods, and the tools involved in the construction.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies and procedures.
- English Language competency.

Skills:

- Prepare materials. tools, equipment and machinery
- Assist site works according to instruction
- Assist routine maintenance in accordance to routine schedule
- Assist in materials loading and unloading activities
- Assist to measure, mark or record measurements
- Control the flow of traffic passing near, in or around work site
- Perform housekeeping

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Adhere to safety regulations, production quality standard
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

SECTION : (F) CONSTRUCTION

DIVISION : (43) SPECIALIZED CONSTRUCTION ACTIVITIES

GROUP : (439) OTHER SPECIALIZED CONSTRUCTION ACTIVITIES

MSIC GROUP : 439

AREA : Scaffolding

JOB TITLE : Mechanical Engineer

LEVEL : 5

RESPONSIBILITIES:

The Mechanical Engineer is responsible to operate computer-assisted engineering or design software or equipment to perform engineering tasks; prepare technical drawings, specifications of mechanical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; consult engineers, customers, or others to discuss existing or potential engineering projects or products; design, implement, maintain, or improve mechanical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements; compile data and write reports regarding existing or potential mechanical engineering studies or projects; perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; prepare specifications for purchases of materials or equipment; estimate labour, material, or construction costs for budget preparation purposes; supervise or train project team members, as necessary; conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems; investigate customer or public complaints to determine the nature and extent of problems; oversee project production efforts to assure projects are completed on time and within budget; inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards; plan or implement research methodology or procedures to apply principles of mechanical theory to engineering projects; design mechanical systems or components that minimize electric energy requirements; and assist in developing capital project programmes for new equipment or major repairs.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and modals.
- Machines and tools, including their designs, uses, repair, and maintenance
- English language competency

- Computer hardware and software, including applications and programming.
- Raw materials, production processes, quality control, costs.
- Principles and processes for providing customer and personal services
- Management principles involved in strategic planning, resource allocation, human resources modelling, leadership technique, production methods, and coordination of people and resources.

Skills:

- Operate computer-assisted engineering or design software or equipment to perform engineering tasks
- Prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Consult engineers, customers, or others to discuss existing or potential engineering projects or products
- Design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Direct or coordinate manufacturing, construction, installation, maintenance, support, documentation, or testing activities to ensure compliance with specifications, codes, or customer requirements
- Compile data and write reports regarding existing or potential electrical engineering studies or projects
- Perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Prepare specifications for purchases of materials or equipment
- Estimate labour, material, or construction costs for budget preparation purposes
- Supervise or train project team members, as necessary
- Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems
- Investigate customer or public complaints to determine the nature and extent of problems
- Oversee project production efforts to assure projects are completed on time and within budget
- Inspect completed installations and observe operations to ensure conformance to design and equipment specifications and compliance with operational, safety, or environmental standards;
- Plan or implement research methodology or procedures to apply principles of electrical theory to engineering projects
- Design electrical systems or components that minimize electric energy requirements, such as lighting systems designed to account for natural lighting

- Plan layout of electric power generating plants or distribution lines or stations and assist in developing capital project programmes for new equipment or major repairs

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 439

AREA : Scaffolding

JOB TITLE : Assistant Mechanical Engineer

LEVEL : 4

RESPONSIBILITIES:

The Assistant Mechanical Engineer is responsible to assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements; assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes; assist to compile data and write reports regarding existing or potential electrical engineering studies or projects; assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications; assist to prepare specifications for purchases of materials or equipment; assist to supervise or train project team members, as necessary; conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problems: and identify and compile customer or public complaints to determine the nature and extent of problems.

Knowledges:

- Practical application includes applying principles, techniques, procedures, and equipment.
- Design techniques, tools, and principals involved in production of precision technical plans, blueprints, drawings, and modals.
- Machines and tools, including their designs, uses, repair, and maintenance
- English language competency
- Computer hardware and software, including applications and programming.
- Raw materials, production processes, quality control, costs.
- Principles and processes for providing customer and personal services
- Management principles involved in strategic planning, resource allocation, human resources modelling, leadership technique, production methods, and coordination of people and resources.

Skills:

- Assist to prepare technical drawings, specifications of electrical systems, or topographical maps to ensure that installation and operations conform to standards and customer requirements
- Assist to design, implement, maintain, or improve electrical instruments, equipment, facilities, components, products, or systems for commercial, industrial, or domestic purposes
- Assist to compile data and write reports regarding existing or potential electrical engineering studies or projects
- Assist to perform detailed calculations to compute and establish manufacturing, construction, or installation standards or specifications
- Assist to prepare specifications for purchases of materials or equipment; assist to supervise or train project team members, as necessary
- Conduct field surveys or study maps, graphs, diagrams, or other data to identify and correct power system problem
- Identify and compile customer or public complaints to determine the nature and extent of problems

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 439

AREA : Scaffolding

JOB TITLE : Mechanical Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Mechanical Supervisor is responsible to conduct site safety and induction briefing; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; assign work to employees based on job; coordinate work activities; order or request materials; arrange and perform maintenance activities; troubleshoot and rectify mechanical problem within work scope; carry out regular work inspections; supervise subordinate work; monitor usage of equipment or construction sites to verify safety and specification are met; Raise safety concerns and identify construction hazard and risk; attend site meetings; perform subordinate appraisal; conduct training for electrical installation works, operation of machinery and equipment, site safety requirement; compile site document or record to prepare report; prepare reports for mechanical; lead and manage team; perform housekeeping; and adhere to safety health and environment regulation

Knowledges:

- CAD software
- Technical drawing standard, codes and symbols
- Computer application and program
- Step and procedure for system isolation and normalisation
- Guideline and company standard operating procedure
- Equipment and machinery Act
- Energy Commission regulation
- Operation and equipment manual
- Material Data Sheet
- Technical data
- Knowledge of HVAC

Skills:

- Conduct site safety and induction briefing
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Assign work to employees based on job
- Coordinate work activities; order or request materials
- Arrange and perform maintenance activities
- Troubleshoot and rectify mechanical problem within work scope
- Carry out regular work inspections
- Supervise subordinate work
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Raise safety concerns and identify construction hazard and risk
- Attend site meetings
- Perform subordinate appraisal
- Conduct training for electrical installation works, operation of machinery and equipment, site safety requirement
- Compile site document or record to prepare report
- Prepare reports for mechanical
- Lead and manage team; perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 439

AREA : Scaffolding

JOB TITLE : Technician

LEVEL : 2

RESPONSIBILITIES:

The Technician is responsible to operate tools, equipment and machinery; carry out scaffolding works according to procedure and specification; carry out routine maintenance in accordance to routine schedule; perform loading and unloading activities of materials; perform housekeeping; and adhere to safety, health and environment regulation.

Knowledges:

- Practical application includes applying techniques, procedures, and equipment.
- Principles and processes for providing customer and personal services
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies and procedures.

Skills:

- Operate tools, equipment and machinery.
- Carry out building security system works according to procedure and specification.
- Carry out routine maintenance in accordance to routine schedule.
- Load and unload activities of materials.
- Perform housekeeping.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 439

AREA : Scaffolding

JOB TITLE : Mechanical Fitter

LEVEL : 1

RESPONSIBILITIES:

The Mechanical Fitter is responsible to interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required; measure and mark surfaces to lay out work, according to drawings; prepare and operate tools, equipment and machinery; prepare materials; hack surface and install piping for air-conditioning and refrigeration system; attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system; prepare air-conditioning and refrigeration system for testing; assist site works according to instruction; assist routine maintenance in accordance to routine schedule; assist in materials loading and unloading activities; assist to measure, mark or record measurements; perform housekeeping; and adhere to safety health and environment regulation.

Knowledges:

- Machines and tools, including their designs, uses, repair, and maintenance.
- Materials, methods, and the tools involved in the construction
- English language competency
- Know-how of relevant equipment, policies and procedures.
- Practical application includes techniques, procedures, and equipment
- Handle basic tools
- Reading and interpretation skills
- Writing skills
- Communication skills
- Measuring skills

Skills:

- Interpret specifications in construction/shop drawing, sketches, or building plans to determine dimensions and materials required
- Measure and mark surfaces to lay out work, according to drawings
- Prepare and operate tools, equipment and machinery
- Prepare materials
- Hack surface and install piping for air-conditioning and refrigeration system

- Attach pipes to walls, structures, or fixtures for air-conditioning and refrigeration system
- Prepare air-conditioning and refrigeration system for testing
- Assist site works according to instruction
- Assist routine maintenance in accordance to routine schedule
- Assist in materials loading and unloading activities
- Assist to measure, mark or record measurements
- Perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 439

AREA : Building Information Modelling (BIM)

JOB TITLE : External Works – BIM Modeller

LEVEL : 4

RESPONSIBILITIES:

The BIM Modeller is responsible to facilitate construction by applying BIM and CAD technologies in the design phase; participate cross-team support for BIM software; ensure all models are compatible and BIM data is available to all project participants; collaborate with the design team and other departments to identify goals and communicate procedural changes; measure dimensions and verify level, alignment, or elevation of structures or fixtures to ensure compliance to building plans and codes; confirm installation of plumbing, wiring, equipment, or appliances performed free from interfacing and clashes and follows applicable regulations; generate overall master list for materials type, quantity, sizing, dimension, cost and duration of completion; monitor construction activities to ensure that environmental regulations are not violated and according to BIM generated; and generate BIM according to Level of Development (LOD)

Knowledges:

- Revit software
- ACAD software
- Technical drawing standard, codes and symbols
- Material knowledge
- Computer application and program
- Guideline and standard
- Equipment manual
- Operation manual
- Material Data Sheet
- Technical data

Skills:

- Facilitate construction by applying BIM and CAD technologies in the design phase
- Participate cross-team support for BIM software
- Ensure all models are compatible and BIM data is available to all project participants
- Collaborate with the design team and other departments to identify goals and communicate procedural changes

- Measure dimensions and verify level, alignment, or elevation of structures or fixtures to ensure compliance to building plans and codes
- Confirm installation of plumbing, wiring, equipment, or appliances performed free from interfacing and clashes and follows applicable regulations
- Generate overall master list for materials type, quantity, sizing, dimension, cost and duration of completion
- Monitor construction activities to ensure that environmental regulations are not violated and according to BIM generated
- Generate BIM according to Level of Development (LOD)

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 439

AREA : Subsurface works – Horizontal Direct Drilling (HDD)

JOB TITLE : Site Engineer

LEVEL : 5

RESPONSIBILITIES:

The Site Engineer is responsible to plan, schedule, or coordinate HDD activities to meet deadlines; prepare project costing and request budget estimates; inspect or review project deliverables to monitor compliance with requirement; monitor work progress; plan and organize construction maintenance activities; interpret project brief to identify work sequence and appropriate construction method; interpret method statement to determine and monitor execution of procedure/work sequence for the project; prepare master work programme/ project milestone; direct and supervise construction contractor, sub-contractor or related worker; and develop or implement quality control and environmental protection programme.

Knowledges:

- Practical application of techniques, procedures, and equipment.
- Customer and personal services.
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Equipment, policies, procedures, and strategies

Skills:

- Plan, schedule, or coordinate HDD activities to meet deadlines
- Prepare project costing and request budget estimates
- Inspect or review project deliverables to monitor compliance with requirement
- Monitor work progress
- Plan and organize construction maintenance activities
- Interpret project brief to identify work sequence and appropriate construction method
- Interpret method statement to determine and monitor execution of procedure/work sequence for the project
- Prepare master work programme/ project milestone
- Direct and supervise construction contractor, sub-contractor or related worker
- Develop or implement quality control and environmental protection programme.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 439

AREA : Subsurface works – Horizontal Direct Drilling (HDD)

JOB TITLE : Assistant Site Engineer

LEVEL : 4

RESPONSIBILITIES:

The Assistant Site Engineer is responsible to assist the plan, schedule, or coordinate subsurface work activities to meet deadlines; assist the prepare project costing and request budget estimates; assist to inspect or review project deliverables to monitor compliance with requirement; assist to monitor work progress; assist the plan and organize construction maintenance activities; assist to interpret project brief to identify work sequence and appropriate construction method; assist to interpret method statement to determine and monitor execution of procedure/work sequence for the project; assist the prepare master work programme/ project milestone; assist to direct and supervise construction contractor, sub-contractor or related worker; and assist to develop or implement quality control and environmental protection programme.

Knowledges:

- Practical application of techniques, procedures, and equipment.
- Customer and personal services.
- English language competency.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Equipment, policies, procedures, and strategies

Skills:

- Assist the plan, schedule, or coordinate subsurface work activities to meet deadlines
- Assist the prepare project costing and request budget estimates
- Assist to inspect or review project deliverables to monitor compliance with requirement
- Assist to monitor work progress
- Assist the plan and organize construction maintenance activities
- Assist to interpret project brief to identify work sequence and appropriate construction method
- Assist to interpret method statement to determine and monitor execution of procedure/ work sequence for the project
- Assist the prepare master work programme/ project milestone

- Assist to direct and supervise construction contractor, sub-contractor or related worker
- Assist to develop or implement quality control and environmental protection programme.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Concern on environmental issues
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing production plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Meticulous in evaluate parts data
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 439

AREA : Subsurface works – Horizontal Direct Drilling (HDD)

JOB TITLE : Site Supervisor

LEVEL : 3

RESPONSIBILITIES:

The Site Supervisor is responsible to prepare daily work schedule, coordinate and supervise for HDD activities; conduct site safety and induction briefing; assign work to employees based on job; read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement; coordinate work activities; monitor usage of equipment or construction sites to verify safety and specification are met; carry out regular work inspections; order or request materials; attend site meetings; compile site document or record to prepare report; Raise safety concerns and identify construction hazard and risk; supervise subordinate work; arrange for maintenance activities; perform subordinate appraisal; conduct training for construction methods, operation of machinery and equipment, site safety requirement; troubleshoot and rectify within work scope; and prepare reports for HDD activities

Knowledges:

- Raw materials, production processes, quality control, costs, and other techniques.
- Materials, methods, and the tools involved in the construction or repair.
- Principles and processes for providing customer and personal services.
- Production methods, and coordination of people and resources.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies, and procedures.
- English language competency.
- Principles and methods for curriculum and training design.
- Principles and procedures for personnel recruitment and personnel information systems.

Skills:

- Prepare daily work schedule, coordinate and supervise for HDD activities
- Conduct site safety and induction briefing
- Assign work to employees based on job
- Read and interpret construction document (such as masterplan, construction drawing, etc) to determine works requirement

- Coordinate work activities
- Monitor usage of equipment or construction sites to verify safety and specification are met
- Carry out regular work inspections
- Order or request materials
- Attend site meetings
- Compile site document or record to prepare report
- Raise safety concerns and identify construction hazard and risk
- Supervise subordinate work
- Arrange for maintenance activities
- Perform subordinate appraisal
- Conduct training for construction methods, operation of machinery and equipment, site safety requirement
- Troubleshoot and rectify within work scope
- Prepare reports for HDD activities.

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Alert on production abnormalities
- Customer orientation skills
- Detail in performing part inspection
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Informative in preparing subordinate action plan
- Knowledgeable and professionalism in work
- Leadership skills and self-Development skills
- Report writing and presentation skills
- Strong interpersonal skills with good attention to details

MSIC GROUP : 439

AREA : Subsurface works – Horizontal Direct Drilling (HDD)

JOB TITLE : Machine Operator

LEVEL : 2

RESPONSIBILITIES:

The Machine Operator is responsible to operate tools, equipment and machinery; carry out construction works according to instruction and drawing; carry out routine maintenance in accordance to routine schedule; perform loading and unloading activities of materials; perform housekeeping; adhere to safety, health and environment regulation.

Knowledges:

- Materials, methods, and the tools involved in the construction.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies and procedures.
- English Language competency
- Reading and writing skills
- Communication skills
- Measuring skills
- Material handling skills
- Basic servicing and cleaning activities
- Use of PPE
- Material requisition
- Standard operating procedure application

Skills:

- Operate tools, equipment and machinery
- Carry out construction works according to instruction and drawing
- Carry out routine maintenance in accordance to routine schedule
- Perform loading and unloading activities of materials
- Perform housekeeping
- Adhere to safety, health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard
- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details

MSIC GROUP : 439

AREA : Subsurface works – Horizontal Direct Drilling (HDD)

JOB TITLE : General Worker

LEVEL : 1

RESPONSIBILITIES:

The General Worker is responsible to prepare tools, equipment and machinery; prepare materials; assist site works according to instruction; assist routine maintenance in accordance to routine schedule; assist in materials loading and unloading activities; assist to measure, mark or record measurements; control the flow of traffic passing near, in or around work site; perform housekeeping; and adhere to safety health and environment regulation.

Knowledges:

- Materials, methods, and the tools involved in the construction.
- Machines and tools, including their designs, uses, repair, and maintenance.
- Know-how of relevant equipment, policies and procedures.
- English Language competency.

Skills:

- Prepare tools, equipment and machinery;
- Prepare materials
- Assist site works according to instruction
- Assist routine maintenance in accordance to routine schedule
- Assist in materials loading and unloading activities
- Assist to measure, mark or record measurements
- Control the flow of traffic passing near, in or around work site
- Perform housekeeping
- Adhere to safety health and environment regulation

Attributes (Attitude/Safety/Environmental):

- Ability to adapt with workplace environment
- Ability to work under pressure
- Adhere to safety regulations, production quality standard

- Firm in decision making
- Good communication with subordinates
- High level of commitment and strong team player
- Good attention to details