



KERAJAAN MALAYSIA

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An Interim Guide on Standard Bill of Quantities
SECTION 1: ROAD WORKS



**AN INTERIM GUIDE ON
STANDARD BILL OF QUANTITIES
SECTION 1: ROAD WORKS**

Diterbitkan oleh:
Jabatan Kerja Raya
Cawangan Jalan



Ketua Pengarah Kerja Raya
Jabatan Kerja Raya Malaysia
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FOREWORD

This Nota Teknik (Jalan) 26/08 (Pindaan 2016): An Interim Guide on Standard Bill of Quantities (revision of existing Nota Teknik (Jalan) 26/08: An Interim Guide on Standard Bill of Quantities) is a compilation of Standard Bill of Quantities for Road and Bridge Works. It is intended as a practical guide for highway and transport engineers in Jabatan Kerja Raya Malaysia (JKR) and Engineering Consultants. This guideline has been divided into two sections, namely:

Section 1: Road Works

Section 2: Bridge Works

Department of Pakar Kejuruteraan Jalan & Jambatan, Cawangan Jalan as a custodian to the JKR technical documents related to road engineering, has taken the initiative to update and publish this guideline in order to:

- a) Adjusted to the technical documents of the Arahan Teknik (Jalan) and Standard Specification for the Road and Bridge Works produced by JKR which are updated in line with current technological developments and to improve the quality of construction works and its final product.
- b) Based on the concept and measurement principles MyCESMM (Malaysian Civil Engineering Standard Method of Measurement) as respond to a common observation where the process of measuring road works and bridge works items often triggers the need for clarification and further information, arising from uncertainties encountered.

The preparation of this guideline as carried out through many discussions and deliberations by the committee members and also a working committee workshop specially held for this purpose. Feedbacks and comments received were carefully considered and incorporated into this guideline in wherever appropriate.

This guideline will be reviewed and updated from time to time to cater for any changes in policies and the inclusion of current requirements, if necessary. Any feedback or improvement to be considered for future revisions shall be forwarded to Bahagian Pembangunan Inovasi & Standard, Cawangan Jalan, JKR Malaysia.

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This **Nota Teknik (Jalan) 26/08 (Pindaan 2016): An Interim Guide on Standard Bill of Quantities** has been prepared by a technical committee comprising of the following members:

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Finally, the publisher would like to express its gratitude to the above committee members, and also all those who were involved, directly or indirectly, but their names missed out from being mentioned above, for their undying effort and substantial contribution towards the successful completion of this document.

Appreciation is also accorded to Ir. Hj. Manan bin Embong, previously the director of Pakar Kejuruteraan Jalan & Jambatan, Cawangan Jalan and Ir. Dr. Mohamad Nor bin Omar, previously the Director of Cawangan Kejuruteraan Jalan & Geoteknik, Jabatan Kerja Raya Malaysia for their full support and cooperation throughout the preparation and compilation of the document.

STANDARD BILL OF QUANTITIES

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1.0 INTRODUCTION

Bill of Quantities (BQs) is one of the important documents in the contractual bidding for any project. It consisted of all relevant items in the every trades / sections of work involved. Basic knowledge of taking off quantities from the respective trades / sections of work make reference to Malaysian Civil Engineering Standard Method of Measurement (MyCESMM) and Standard Methods of Measurement (MOM) which should be made available to complement the descriptions outlined in the BQs.

The level of description of the trades / sections may vary depending on the extent of detail necessary by the quantity surveyor or engineer. Variations in description may also differ from one person to another based on personal preferences, resulting with different types and forms of BQs and their uses. Although the document should be read in conjunction with that prescribed in the relevant clauses in the Standard Methods of Measurement, inconsistencies may sometimes arise and generate uncertainty and misunderstanding in the real intent of the descriptions.

Therefore it is necessary for the design unit to have a standard format and form for the BQs to streamline and provide uniformity in the preparation of contract documents. This document is prepared to cover all works in the construction of roads and bridges. Where necessary, short descriptions are being used in the BQs to line up with full descriptions in the Malaysian Civil Engineering Standard Method of Measurement (MyCESMM) and Standard Methods of Measurement (MOM). This document is intended for the road design engineers in JKR and also by consultants engaged for JKR projects. Other interest parties may also use this document, where appropriate for their project.

2.0 STANDARD BILL OF QUANTITIES

Standard System

Bill of Quantities must be prepared in accordance with the latest edition of the Malaysian Civil Engineering Standard Method of Measurement (MyCESMM) and Standard Methods of Measurement (MOM).

Format and Layout

Every Bill of Quantities should be presented in a common format and layout. The following items prescribed some basic aspects of the form BQs.

a. General

Bill of Quantities must be produced on size A4 paper with suitable front and back covers or/and bound in book form together with the Conditions of Contract etc.

b. Index

A comprehensive index must be provided.

c. Sections

A single comprehensive document is preferred provided in the individual sections can be extracted when cost information is required.

d. Collections and Summaries

The total on each page must be carried to a collection of each bill. Each bill total must be carried to a final summary.

e. References

Each page must contain the title of the project on the top of each page. The bill number and a name of applicable trade shall be placed just beneath the project title at the centre of the page.

Specification for the Works

“Standard Specification for the Road and Bridge Works” produced by JKR Malaysia shall be used in the preparation of the tender documents. The specification shall not be bound into the bill of quantities but will be issued by the Department to bidders on request or can be obtained from the Department’s Sale office.

Due care has been taken to use the same terminology as the specification in the preparation of this document. However, a full description of additional preambles must be provided for items / materials not covered by the specification. Any contractual clauses and principles from the specifications, preambles, etc. must be carefully edited and can be included in bills of quantities only if they are supplementary to the Conditions of Contract of Preliminaries, but are to be excluded if found to be inconsistent with the Conditions of Contract or Preliminaries.

Amendments to Bill of Quantities

Discrepancies between the drawing, specification and / or any other instruction must be brought to the attention of the Project Manager. The Project Manager must also be informed should any errors be noted and amendments are required to the bills of quantities out of bid. This revised pages or information in the form of an addendum document are to be handed to the Project Manager who will issue the document to all bidders concerned.

PROJECT:

SUMMARY OF TENDER

BILL NO	DESCRIPTION OF WORKS	PAGE	AMOUNT (RM)
1	GENERAL ITEMS	BQ1-1/9 - BQ1-9/9	.....
2	DEMOLITION AND SITE CLEARANCE	BQ2-1/8 - BQ2-8/8	.....
3	EARTHWORKS	BQ3-1/5 - BQ3-5/5	.....
4	DRAINAGE WORKS	BQ4-1/32 - BQ4-32/32	.....
5	PAVEMENT WORKS	BQ5-1/21 - BQ5-21/21	.....
6	ROAD FURNITURE	BQ6-1/26 - BQ6-26/26	.....
7	GEOTECHNICAL WORKS	BQ7-1/18 - BQ7-18/18	.....
8	STRUCTURE WORKS *	SECTION 2 : BRIDGE WORKS SUMMARY - 1/1	.....
9	TRAFFIC MANAGEMENT AND CONTROL	BQ9-1/10 - BQ9-10/10	.....
10	ENVIRONMENT PROTECTION AND ENHANCEMENT	BQ10-1/12 - BQ10-12/12	.....
11	ROUTINE MAINTENANCE WORKS	BQ11-1/9 - BQ11-9/9	.....
12	OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT (FOR PROJECT ABOVE 20M)	BQ12-1/5 - BQ12-5/5	.....
13	PROVISIONAL / PRIME COST SUMS	BQ13-1/3 - BQ13-3/3	.....
	TOTAL AMOUNT (RM)		

RINGGIT MALAYSIA :

Completion period : Weeks.

Contractor

Witness

Signature :

Signature :

Name :

Name :

Company :

NRIC No. :

Stamp :

Date :

Date :

* Delete where not applicable

PROJECT :

BILL NO. 1 - GENERAL ITEMS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
1.1	A100	<u>CONTRACTUAL REQUIREMENTS</u>				
1.1.1		<u>Bond</u>				
1.1.1.1	A111	Performance Bond.				
1.1.1.1.1	A111.1	Banker's/Insurance/Financial Institution Guarantee.*	sum			
1.1.1.1.2	A111.2	Performance Guarantee Sum.*	sum			
1.1.1.2	A112	Design Guarantee Bond (for stand alone design to be designed by the Contractor).	sum			
1.1.2		<u>Insurances</u>				
1.1.2.1	A121	Insurance of the Works.	sum			
1.1.2.2	A122	Public Liability Insurance.	sum			
1.1.2.3	A123	SOCISO / Workmen Compensation Insurance.	sum			
1.1.3		<u>Statutory Obligations</u>				
1.1.3.1	A139	Compliance with law, regulations or by laws, or any order or directive issued by public authorities.	sum			
1.2	A200	<u>SO/PD'S REQUIREMENTS</u>				
1.2.1		<u>Facilities for the SO/PD's Representative</u>				
		Rate shall be deemed to include the provision of water supply, electricity, and communication facilities.				
1.2.1.1	A211	Establishment and removal of office as per Specification.				
1.2.1.1.1	A211.1	JKR Design (Type A/B/C/D/E/F/G)** (with a floor area of m ²).	sum			
		OR				
1.2.1.1.2	A211.2	Relocatable Type (new/used)* (with a floor area of m ²).	sum			
		OR				
1.2.1.1.3	A211.3	Rental of Shop Lot (with a floor area of m ²).	sum			
1.2.1.2	A212	Maintenance of office.	month			
		Page Total carried to Summary of Bill No. 1				

* Delete where not applicable

** Designer to decide which is applicable

Duration to be inserted by tenderer based on tendered period

PROJECT :

BILL NO. 1 - GENERAL ITEMS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
1.2	A200	<u>SO/PD'S REQUIREMENTS (cont'd)</u>				
1.2.1.3	A213.1	Establishment and removal of [e.g. purpose built] laboratories [with a minimum floor area of 60 m ² as shown in Drawing].	sum			
		OR				
1.2.1.4	A213.2	Rental of a premise of equivalent floor area and standard not inferior to that of the JKR specified type with similar fittings and necessary equipment.	sum			
		OR				
1.2.1.5	A213.3	Propose an accredited laboratory approved by SIRIM as an alternative to the construction of a testing laboratory.	sum			
1.2.1.6	A214	Maintenance of laboratories.	mth			
1.2.2		<u>Services for the SO/PD's Representative</u>				
1.2.2.1	A239	Provision of transport services as per Specification.				
1.2.2.1.1	A239.1	.....no of motorcycles (.....vehicle month).	sum			
1.2.2.1.2	A239.2	.....no of 4 wheel drive vehicle (.....vehicle month).	sum			
1.2.2.1.3	A239.3	Operation and maintenance .....no. of motorcycles (.....vehicle month).	month#		
1.2.2.1.4	A239.4	Operation and maintenance .....no. of 4 wheel drive vehicle (.....vehicle month).	month#		
1.2.3		<u>Equipment for Use by the SO/PD's Representative</u>				
1.2.3.1	A223	Provision of laboratory equipment (with type and quantity as per Specification).	sum			
1.2.3.2	A224	Maintenance of laboratory equipment.	mth			
1.2.3.3	A221	Provision of site office equipment (with type and quantity as per Specification).				
1.2.3.3.1	A221.1	a) No. computer.	sum			
1.2.3.3.2	A221.2	b) No. photocopy machine.	sum			
1.2.3.3.3	A221.3	c) No. digital / video camera.	sum			
1.2.3.3.4	A221.4	d) No. fax machine.	sum			
1.2.3.3.5	A221.5	e) No. printer.	sum			
1.2.3.3.6	A221.6	f) No. scanner.	sum			
1.2.3.3.7	A221.7	g) No. LCD projector & screen	sum			
1.2.3.3.8	A221.8	h) No.	sum			
		Page Total carried to Summary of Bill No. 1				

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PROJECT :

BILL NO. 1 - GENERAL ITEMS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
1.2	A200	<u>SO/PD'S REQUIREMENTS (cont'd)</u>				
1.2.3.4	A222	Maintenance of site office equipment.	mth			
1.2.3.5	A225	Provision of surveying equipment [with type and quantity as per Specification].	sum			
1.2.3.6	A226	Maintenance of survey equipment.	mth			
1.2.4		<u>Attendance for SO/PD's Representative</u>				
1.2.4.1	A243	[..... Nos.] Laboratory assistant(s) / technician(s).	man-mth#		
1.2.4.2	A244	[..... Nos.] General labours.	man-mth#		
1.2.4.3	A242	[..... Nos.] Survey assistants.	man-mth#		
1.2.5		<u>Miscellaneous</u>				
1.2.5.1	A262	Project signboard as per Drawing.	nr			
1.2.5.2	A261	Project report [in sets] comprising of progress report and quality control report. Rate to include progress photographs.	mth			
1.2.5.3	A254	Works programme [in Microsoft Project/Primavera** on a Gantt Chart format] and required personnel to update the programme as per Specification.	sum			
1.2.5.4	A263	As built drawings as per Specification.	sum			
1.2.5.5	A350	Clearance of site upon completion.	sum			
1.2.5.6	A264	Video recording.	sum			
1.2.5.7	A245	[..... Nos.] License Security guards.	man-mth#		
1.3	A300	<u>PROJECT REQUIREMENTS</u>				
1.3.1	A310	Survey and setting out [by licensed surveyor].	sum			
1.3.2		<u>Quality Assurance/Quality Control (QA/QC)</u>				
1.3.2.1	A321	QA/QC Plan as per Specification.	sum			
1.3.3		<u>Submission of Documents</u>				
1.3.3.1	A251	Project execution plan as per Specification.	sum			
1.3.3.2	A252	Drawings as per Specification.	sum			
1.3.3.3	A253	Method Statement as per Specification.	sum			
		Page Total carried to Summary of Bill No. 1				

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BILL NO. 1 - GENERAL ITEMS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
1.4	A400	<u>AUTHORITIES' REQUIREMENTS [OCCUPATIONAL SAFETY AND HEALTH REQUIREMENT (FOR PROJECT BELOW 20M)]</u>				
1.4.1		<u>Planning For Safety & Health Management</u>				
1.4.1.1	A411	Preparation of Hazard Identification Risk Assessment and Risk Control (HIRARC) for the activities carried out at site. (To be sequent submitted before commencement of each works throughout the contract period).	sum			
1.4.1.2	A414	Prepare and submit to the S.O/P.D of five (5) copies monthly safety & health report describing the occurrences of accidents, near misses, injuries and deaths and the actions taken. The report may be incorporated in the Progress Report for the entire duration of the contract. It shall also include:- i. Schedule of safety & health committee meetings. ii. Site safety & health toolbox meetings. iii. Safety & health audit reports. iv. Safety & health inspections reports. v. Safety and health policy. vi. Emergency Response Plan (ERP). vii. Chemical Safety Data Sheets (CSDS).	pth			
1.4.2		<u>Resources For Site Safety</u>				
1.4.2.1	A412	Employment of a Site Safety & Health Supervisor (SSS) and to the satisfaction of the S.O/P.D for the entire duration of the construction period to be stationed minimum 15 hours a week at the site.	man-mth			
1.4.3		<u>Protective Equipment</u>				
1.4.3.1	A413	Provision and maintenance of Personal Protective Equipment to S.O/P.D staffs at Site of adequate quantity and of approved quality. The equipment shall include but not be limited to the following:				
1.4.3.1.1	A413.1	Safety boots.	pairs			
1.4.3.1.2	A413.2	Safety helmets.	pcs			
1.4.3.1.3	A413.3	Full Body Harness c/w Hook and Lankyard for workmen who work at heights more than 2m above ground level.	pcs			
1.4.3.1.4	A413.4	Safety / life lines for workmen who work at heights more than 2m above ground level.	m			
1.4.3.1.5	A413.5	Protective gloves.	pairs			
		Page Total carried to Summary of Bill No. 1				

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PROJECT :

BILL NO. 1 - GENERAL ITEMS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
1.4.3.1.6	A413.6	Safety goggles.	pairs			
1.4.3.1.7	A413.7	Safety jackets of reflective type.	pcs			
1.4.3.1.8	A413.8	Ear plugs and muffs.	pairs			
1.4.3.1.9	A413.9	Gas masks.**	set			
1.4.3.1.10	A413.10	Dust musks.	pcs			
1.4.3.1.11	A413.11	Head lamp.**	pcs			
1.4.3.1.12	A413.12	Life jackets.**	pcs			
1.4.3.2		Provision and maintenance on the site during the duration of the works, of the adequate safety equipment to be approved by the S.O/P.D as follows:				
1.4.3.2.1	A413.13	Gas detectors.**	nos			
1.4.3.2.2	A413.14	Breathing apparatus.**	pcs			
1.4.3.2.3	A413.15	Air ventilation pumps.**	pcs			
1.4.3.2.4	A413.16	Warning lights.	pcs			
1.4.3.2.5	A413.17	Fire extinguishers.	pcs			
1.4.3.2.6	A413.18	Hazard tape.	roll			
1.4.3.2.7	A413.19	Safety barriers.	pcs			
1.4.4		<u>Safe Working Area</u>				
1.4.4.1	A419.1	Supply, erection, maintenance and removal on completion of the works, protective and security hoarding as stipulated in JKR Specification For Occupational Safety And Health For Engineering Construction Works.	sum			
1.4.4.2	A419.2	Supply, erection, maintains and dismantling of catch platform during demolition of structure or other related exterior works at more than 12m height. Such platform shall be designed by a Professional Engineer and certified for safety prior to erection as stipulated in JKR Specification For Occupational Safety And Health For Engineering Construction Works.*	sum			
1.4.4.3	A419.3	Supply, erection, maintenance and removal of safety barricades / fencing / railing / screen / wire netting / toe board for maintaining safe working environment.*	sum			
		Page Total carried to Summary of Bill No. 1				

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BILL NO. 1 - GENERAL ITEMS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
1.4.4.4	A419.4	Provision and maintenance of guardrails or board fences and temporary foot walks with adequate temporary overhead protection for public walkways and thoroughfares.*	sum			
1.4.4.5	A419.5	Condoning off working area and provision of public control and safety measures where lifting operations, moving, shifting, transferring works and carried out outside the hoarded up area of the worksite as stipulated in JKR Specification For Occupational Safety And Health For Engineering Construction Works.	sum			
1.4.4.6	A419.6	Measures to prevent the breeding of mosquitoes, houseflies, rats, insects and other dangerous animals on the site throughout contract period.	sum			
1.4.5		<u>Special Work Condition</u> Allow for Statutory Obligation including payment of all fees and charges compliance with Occupational Safety and Health requirements stated in laws, regulations and by-laws which are not included elsewhere in this Bills of Quantities as stipulated under the Condition of Contract and JKR Specification For Occupational Safety And Health For Engineering Construction Works , details of which are to be particularized below:-				
1.4.5.1	A420	The Contractor shall ensure that closed tanks with restricted means of entry and exit, open manholes, trenches, pipes, flues, ducts, ceiling voids, enclosed rooms such as basements and other places where there is inadequate ventilation and/or the air is either contaminated or oxygen deficient, be tested before entry to determine that there are adequate levels of oxygen present, and that dangerous amounts of flammable and or poisonous gases are not present. (Proprietary meters are available). The Contractor shall establish a safe work system for workers who will be carrying out their work in confined spaces. The Contractor shall adopt an entry permit system, so as to ensure that employees and others are aware of the location of anyone required to enter confined spaces.	sum			
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PROJECT :

BILL NO. 1 - GENERAL ITEMS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
1.5	A500	<u>CONTRACTOR'S REQUIREMENTS</u>				
1.5.1		<u>Facilities</u> Item shall be deemed to include the provision of water supply, electricity, and sanitary facilities and their continuing operation and/or maintenance.				
1.5.1.1	A511.1	Set up offices and remove upon completion.	sum			
1.5.1.2	A511.2	Maintain office for duration of contract period.	sum			
1.5.1.3	A512.1	Provision of office equipment and remove upon completion.	sum			
1.5.1.4	A512.2	Maintain office equipment for duration of contract period.	sum			
1.5.1.5	A515.1	Set up stores and remove upon completion.	sum			
1.5.1.6	A515.2	Maintain store for duration of contract period.	sum			
1.5.1.7	A516.1	Set up workshops and remove upon completion.	sum			
1.5.1.8	A516.2	Maintain workshop for duration of contract period.	sum			
1.5.1.9	A517.1	Set up workmen accomodation and remove upon completion.	sum			
1.5.1.10	A517.2	Maintain workmen accomodation for duration of contract period.	sum			
1.5.2		<u>Access and temporary roads</u>				
1.5.2.1	A521.1	Construct temporary access roads to site.	sum			
1.5.2.2	A521.2	Maintain temporary access roads for duration of contract period.	sum			
1.5.2.3	A529.1	Construct temporary drainage to site.	sum			
1.5.2.4	A529.2	Maintain temporary drainage for duration of contract period.	sum			
1.5.2.5	A529.3	Construct temporary crossing(s) and remove upon completion.	sum			
1.5.2.6	A529.4	Maintain temporary crossing(s) for duration of contract period.	sum			
		Page Total carried to Summary of Bill No. 1				

* Delete where not applicable

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PROJECT :

BILL NO. 1 - GENERAL ITEMS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
1.5.3		<u>Site Management</u>				
1.5.3.1	A531	..... no. Site agent for the duration of contract period.	man-mth#		
1.5.3.2	A532	..... no. QA/QC officer for the duration of contract period.	man-mth#		
1.5.4		<u>Mobilisation and demobilisation.</u>				
1.5.4.1	A540	Mobilisation and demobilisation excluding piling and other specialist work(s) (rate to include remobilisation).	sum			
1.6	A600	<u>DESIGN AND BUILD ELEMENT</u>				
1.6.1	A650	Design fees (these apply to fees (including reimbursable) to be paid to the Consultants engaged for the project, they may include engineers, quantity surveyors, architects, etc).	sum			
1.6.2	A670	Supervision fees (consultants site staff).	sum			
1.6.3	A660	<u>Independent Checkers</u>				
1.6.3.1	A661	Structural design.	sum			
1.6.3.2	A662	Geotechnical design.	sum			
1.6.3.3	A663	Road safety audit.	sum			
1.6.4	A539	<u>Contractor's Superintendence</u>				
1.6.4.1	A539.1	..... no. Project Manager (..... man-month).	sum			
1.6.4.2	A539.2	..... nos. Engineers (..... man-month).	sum			
1.6.4.3	A539.3	..... nos. Supervisors (..... man-month).	sum			
1.6.4.4	A539.4	..... nos. Clerk (..... man-month).	sum			
1.6.4.5	A539.5	..... nos. (..... man-month).	sum			
1.6.5		<u>Data Collection</u>				
1.6.5.1	A610	Preliminary engineering studies.	sum			
1.6.5.2	A620	Design survey.	sum			
1.6.5.3	A630	Utilities survey.	sum			
1.6.5.4	A690	Soil investigation.	sum			
1.6.5.5	C110	Traffic Impact Study.	sum			
		Page Total carried to Summary of Bill No. 1				

* Delete where not applicable

** Designer to decide which is applicable

Duration to be inserted by tenderer based on tendered period

PROJECT :

BILL NO. 1 - GENERAL ITEMS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		Summary of Bill No. 1 : General Items				
		Page BQ1 - 1/9				
		Page BQ1 - 2/9				
		Page BQ1 - 3/9				
		Page BQ1 - 4/9				
		Page BQ1 - 5/9				
		Page BQ1 - 6/9				
		Page BQ1 - 7/9				
		Page BQ1 - 8/9				
		Total of Bill No. 1 carried to Summary				

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*** Designer to decide which is applicable*

Duration to be inserted by tenderer based on tendered period

PROJECT:

Bill NO. 2 - DEMOLITION AND SITE CLEARANCE

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		Items for demolition and site clearance shall be deemed to include disposal of the materials arising at the contractor's own disposal site outside the R.O.W as approved by the S.O/P.D.				
2.1	E100	<u>GENERAL CLEARANCE</u>				
2.1.1		<u>Above Ground</u>				
2.1.1.1	E110.1	General clearance for primary forest/bushes /paddy plantation. Rate to include the removal of trees and stumps, undergrowth, shrubs, roots, and the likes. [All trees of 0.5 m girth and above shall become the property of the Government].	ha			
2.1.1.2	E110.2	General clearance for plantation estate.	ha			
2.1.2		<u>Water Bodies</u>				
2.1.2.1	E120	At water bodies, rate to include removal and disposal of items as per Specification in or at [Lake Project] including objects either floating, submerged or at the bed of the [lake/swampy/river/land].	ha			
2.1.3	E200	<u>TREES</u>				
		Felling of trees shall be deemed to include uprooting and removal of stumps. [All trees of 0.5 m girth and above shall become the property of the Government]. (Holes after the removal of stumps shall be filled with granular material).				
2.1.3.1	E210	Trees of girth: 0.50 m to not exc 1 m.	nr			
2.1.3.2	E220	Trees of girth: exc 1 m to not exc 2 m.	nr			
2.1.3.3	E230	Trees of girth: exc 2 m to not exc 5 m.	nr			
2.1.3.4	E240	Trees of girth exceeding 5 m.	nr			
2.1.3.5	E290	Relocating of trees to new location as per S.O/P.D instruction.				
2.1.3.5.1	E290.1	Trees of girth: 0.50 m to not exc 1 m.	nr			
2.1.3.5.2	E290.2	Trees of girth: exc 1 m to not exc 2 m.	nr			
2.1.3.5.3	E290.3	Trees of girth: exc 2 m to not exc 5 m.	nr			
2.1.3.5.4	E290.4	Trees of girth exceeding 5 m.	nr			
		Page Total carried to Summary of Bill No. 2				

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PROJECT:

Bill NO. 2 - DEMOLITION AND SITE CLEARANCE

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
2.2		<u>DEMOLITION AND REMOVAL FROM SITE OF ALL BUILDINGS AND EXISTING STRUCTURES</u>				
2.2.1	E300	<u>Buildings</u>				
2.2.1.1		<u>Brickwork and Masonry</u>				
2.2.1.1.1	E321	Individual Building - Single storey				
	E321.1	less than 100 m ² (..... Nos)	sum			
	E321.2	100 - 200 m ² (..... Nos)	sum			
	E321.3	exceeding 200 m ² (..... Nos)	sum			
2.2.1.1.2	E321	Individual Building - Double storey				
	E321.4	less than 100 m ² (..... Nos)	sum			
	E321.5	100 - 200 m ² (..... Nos)	sum			
	E321.6	exceeding 200 m ² (..... Nos)	sum			
2.2.1.1.3	E321	Individual Building - storey				
	E321.7	less than 100 m ² (..... Nos)	sum			
	E321.8	100 - 200 m ² (..... Nos)	sum			
	E321.9	exceeding 200 m ² (..... Nos)	sum			
2.2.1.1.4	E322	Group of Building - Single storey				
	E322.1	less than 100 m ² (..... Nos)	sum			
	E322.2	100 - 200 m ² (..... Nos)	sum			
	E322.3	exceeding 200 m ² (..... Nos)	sum			
2.2.1.1.5	E322	Group of Building - Double storey				
	E322.4	less than 100 m ² (..... Nos)	sum			
	E322.5	100 - 200 m ² (..... Nos)	sum			
	E322.6	exceeding 200 m ² (..... Nos)	sum			
2.2.1.1.6	E322	Group of Building (Identical and same number of storey) -storey				
	E322.7	less than 100 m ² (..... Nos)	sum			
	E322.8	100 - 200 m ² (..... Nos)	sum			
	E322.9	exceeding 200 m ² (..... Nos)	sum			
2.2.1.2		<u>Concrete</u>				
2.2.1.2.1	E311	Individual Building - Single storey				
	E311.1	less than 100 m ² (..... Nos)	sum			
	E311.2	100 - 200 m ² (..... Nos)	sum			
	E311.3	exceeding 200 m ² (..... Nos)	sum			
2.2.1.2.2	E311	Individual Building - Double storey				
	E311.4	less than 100 m ² (..... Nos)	sum			
	E311.5	100 - 200 m ² (..... Nos)	sum			
	E311.6	exceeding 200 m ² (..... Nos)	sum			
		Page Total carried to Summary of Bill No. 2				

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PROJECT:

Bill NO. 2 - DEMOLITION AND SITE CLEARANCE

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
2.2.1.2.3	E311	Individual Building - storey				
	E311.7	less than 100 m ² (..... Nos)	sum			
	E311.8	100 - 200 m ² (..... Nos)	sum			
	E311.9	exceeding 200 m ² (..... Nos)	sum			
2.2.1.2.4	E312	Group of Building - Single storey				
	E312.1	less than 100 m ² (..... Nos)	sum			
	E312.2	100 - 200 m ² (..... Nos)	sum			
	E312.3	exceeding 200 m ² (..... Nos)	sum			
2.2.1.2.5	E312	Group of Building - Double storey				
	E312.4	less than 100 m ² (..... Nos)	sum			
	E312.5	100 - 200 m ² (..... Nos)	sum			
	E312.6	exceeding 200 m ² (..... Nos)	sum			
2.2.1.2.6	E312	Group of Building (Identical and same number of storey) -storey				
	E312.7	less than 100 m ² (..... Nos)	sum			
	E312.8	100 - 200 m ² (..... Nos)	sum			
	E312.9	exceeding 200 m ² (..... Nos)	sum			
2.2.1.3		<u>Timber</u>				
2.2.1.3.1	E331	Individual Building - Single storey				
	E331.1	less than 100 m ² (..... Nos)	sum			
	E331.2	100 - 200 m ² (..... Nos)	sum			
	E331.3	exceeding 200 m ² (..... Nos)	sum			
2.2.1.3.2	E331	Individual Building - Double storey				
	E331.4	less than 100 m ² (..... Nos)	sum			
	E331.5	100 - 200 m ² (..... Nos)	sum			
	E331.6	exceeding 200 m ² (..... Nos)	sum			
2.2.1.3.3	E331	Individual Building - storey				
	E331.7	less than 100 m ² (..... Nos)	sum			
	E331.8	100 - 200 m ² (..... Nos)	sum			
	E331.9	exceeding 200 m ² (..... Nos)	sum			
2.2.1.3.4	E332	Group of Building - Single storey				
	E332.1	less than 100 m ² (..... Nos)	sum			
	E332.2	100 - 200 m ² (..... Nos)	sum			
	E332.3	exceeding 200 m ² (..... Nos)	sum			
2.2.1.3.5	E332	Group of Building - Double storey				
	E332.4	less than 100 m ² (..... Nos)	sum			
	E332.5	100 - 200 m ² (..... Nos)	sum			
	E332.6	exceeding 200 m ² (..... Nos)	sum			
		Page Total carried to Summary of Bill No. 2				

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PROJECT:

Bill NO. 2 - DEMOLITION AND SITE CLEARANCE

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
2.2.1.3.6	E332	Group of Building (Identical and same number of storey) -storey				
	E332.7	less than 100 m ² (..... Nos)	sum			
	E332.8	100 - 200 m ² (..... Nos)	sum			
	E332.9	exceeding 200 m ² (..... Nos)	sum			
2.2.1.4		<u>Metal</u>				
2.2.1.4.1	E341	Individual Building - Single storey				
	E341.1	less than 100 m ² (..... Nos)	sum			
	E341.2	100 - 200 m ² (..... Nos)	sum			
	E341.3	exceeding 200 m ² (..... Nos)	sum			
2.2.1.4.2	E341	Individual Building - Double storey				
	E341.4	less than 100 m ² (..... Nos)	sum			
	E341.5	100 - 200 m ² (..... Nos)	sum			
	E341.6	exceeding 200 m ² (..... Nos)	sum			
2.2.1.4.3	E341	Individual Building - storey				
	E341.7	less than 100 m ² (..... Nos)	sum			
	E341.8	100 - 200 m ² (..... Nos)	sum			
	E341.9	exceeding 200 m ² (..... Nos)	sum			
2.2.1.4.4	E342	Group of Building - Single storey				
	E342.1	less than 100 m ² (..... Nos)	sum			
	E342.2	100 - 200 m ² (..... Nos)	sum			
	E342.3	exceeding 200 m ² (..... Nos)	sum			
2.2.1.4.5	E342	Group of Building - Double storey				
	E342.4	less than 100 m ² (..... Nos)	sum			
	E342.5	100 - 200 m ² (..... Nos)	sum			
	E342.6	exceeding 200 m ² (..... Nos)	sum			
2.2.1.4.6	E342	Group of Building (Identical and same number of storey) -storey				
	E342.7	less than 100 m ² (..... Nos)	sum			
	E342.8	100 - 200 m ² (..... Nos)	sum			
	E342.9	exceeding 200 m ² (..... Nos)	sum			
2.2.1.5		<u>No predominant material</u>				
2.2.1.5.1	E351	Individual Building - Single storey				
	E351.1	less than 100 m ² (..... Nos)	sum			
	E351.2	100 - 200 m ² (..... Nos)	sum			
	E351.3	exceeding 200 m ² (..... Nos)	sum			
2.2.1.5.2	E351	Individual Building - Double storey				
	E351.4	less than 100 m ² (..... Nos)	sum			
	E351.5	100 - 200 m ² (..... Nos)	sum			
	E351.6	exceeding 200 m ² (..... Nos)	sum			
		Page Total carried to Summary of Bill No. 2				

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PROJECT:

Bill NO. 2 - DEMOLITION AND SITE CLEARANCE

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
2.2.1.5.3	E351	Individual Building - storey				
	E351.7	less than 100 m ² (..... Nos)	sum			
	E351.8	100 - 200 m ² (..... Nos)	sum			
	E351.9	exceeding 200 m ² (..... Nos)	sum			
2.2.1.5.4	E352	Group of Building - Single storey				
	E352.1	less than 100 m ² (..... Nos)	sum			
	E352.2	100 - 200 m ² (..... Nos)	sum			
	E352.3	exceeding 200 m ² (..... Nos)	sum			
2.2.1.5.5	E352	Group of Building - Double storey				
	E352.4	less than 100 m ² (..... Nos)	sum			
	E352.5	100 - 200 m ² (..... Nos)	sum			
	E352.6	exceeding 200 m ² (..... Nos)	sum			
2.2.1.5.6	E352	Group of Building (Identical and same number of storey) -storey				
	E352.7	less than 100 m ² (..... Nos)	sum			
	E352.8	100 - 200 m ² (..... Nos)	sum			
	E352.9	exceeding 200 m ² (..... Nos)	sum			
2.2.2	E400	<u>Other Structures</u>				
2.2.2.1		<u>Concrete</u>				
2.2.2.1.1	E411	Above ground – [e.g. 10 m long x 6 m wide bridges].	sum			
2.2.2.1.2	E412	Below ground – [e.g. Precast concrete box culverts including headwall, wingwall and foundation 20 m long x 3 m wide x 2 m deep].	sum			
2.2.2.2		<u>Brickwork and Masonry</u>				
2.2.2.2.1	E421.1	Above ground – [e.g. 10 m x 1.8 m high fences].	sum			
2.2.2.2.2	E421.2	Above ground – [e.g. 10 m x 3 m high retaining wall].	sum			
2.2.2.2.3	E422.1	Below ground – [e.g. 2 m x 2 m x 3 m deep manhole].	sum			
2.2.2.2.4	E422.2	Below ground – [e.g. block drain including foundation 50 m x 1 m wide x 2 m deep].	sum			
2.2.2.2.5	E422.3	Below ground – [e.g. 2 m x 2 m x 3 m deep sump].	sum			
2.2.2.3		<u>Timber</u>				
2.2.2.3.1	E431	Above ground – [e.g. 3 m x 3 m timber shed.]	sum			
Page Total carried to Summary of Bill No. 2						

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PROJECT:

Bill NO. 2 - DEMOLITION AND SITE CLEARANCE

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
2.3		<u>DISMANTLE AND SEND TO STORE FOR REUSE AS DIRECTED BY S.O / P.D*</u>				
2.3.1		<u>Metal</u>				
2.3.1.1	E441.1	Above ground – [e.g. 2 m x 2 m x 20 m high truss support to water tank].	sum			
2.3.1.2	E441.2	Above ground – [e.g. 100 m long guardrails] the guardrails shall become the property of the employer and shall be delivered to the store at (.....).	sum			
2.3.1.3	E441.3	Above ground – [e.g. 100 m long x 2.10 m fences] the fences shall become the property of the employer and shall be delivered to the store at (.....).	sum			
2.3.1.4	E441.4	Above ground – [e.g. 6 m long x 2.10 m gates] the gates shall become the property of the employer and shall be delivered to the store at (.....).	sum			
2.3.1.5	E441.5	Above ground – [e.g. 6 m long x 1.8 m high signboard] the signboard shall become the property of the employer and shall be delivered to the store at (.....).	sum			
2.3.2		<u>No Predominant Material</u>				
2.3.2.1	E451	Above ground – [e.g. 10 m long x 6 m wide x 3 m high water tank with timber roof].	sum			
2.3.2.2	E452	Below ground – [e.g. 10 m x 6 m wide x 5 m deep tank with steel bracing].	sum			
2.3.3	E500	<u>Pipelines</u>				
		Demolition of pipelines shall be deemed to include demolition and removal of supports.				
2.3.3.1	E510	Dismantle (e.g. 400 mm DN elevated mild steel pipeline). The pipeline shall become the property of the Employer and shall be delivered to the store at (.....).	m			
2.3.4		<u>Water Bodies</u>				
2.3.4.1	E900.1	Demolition of (.....).	m			
		Page Total carried to Summary of Bill No. 2				

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PROJECT:

Bill NO. 2 - DEMOLITION AND SITE CLEARANCE

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
2.3.5		<u>Salvage Value</u> Salvage value to credit to government of the following:				
2.3.5.1	E900.2	Building material.	sum			
2.3.5.2	E900.3	Structure material.	sum			
2.3.5.3	E900.4	Pipelines material.	sum			
		Page Total carried to Summary of Bill No. 2				

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PROJECT:

Bill NO. 2 - DEMOLITION AND SITE CLEARANCE

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		Summary of Bill No. 2 : Demolition and Site Clearance				
		Page BQ2 - 1/8				
		Page BQ2 - 2/8				
		Page BQ2 - 3/8				
		Page BQ2 - 4/8				
		Page BQ2 - 5/8				
		Page BQ2 - 6/8				
		Page BQ2 - 7/8				
		Total of Bill No. 2 carried to Summary				

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PROJECT :

BILL NO. 3 - EARTHWORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
3.1		<u>STRIPPING OF TOPSOIL</u>				
		<u>Stripping</u>				
3.1.1	F111.1	Topsoil of average depth of 150 mm and disposed to the Contractor's dumpsite as approved by the S.O./P.D.	m ²			
3.1.2	F111.2	Topsoil of average depth of 150 mm and stockpile for re-use as top soil for turfing as approved by the S.O./P.D.	m ²			
3.2		<u>EXCAVATE, LOAD, HAUL AND DEPOSIT</u>				
		<u>Cut to Fill</u>				
		Excavation in cut shall be deemed to include trimming and preparation of excavated surface and transportation from source to place of fill.				
3.2.1	F121.1	Excavate in earth material from original ground level [to form embankment].	m ³			
3.2.2	F122	Excavate in natural hard material to form embankment.	m ³			
3.2.3	F123.1	Excavate in rock material by open blasting to [e.g. form embankment].	m ³			
3.2.4	F123.2	Excavate in rock material by controlled blasting to [e.g. form embankment].	m ³			
3.2.5	F123.3	Excavate in rock material by hydraulic rock breaker to [e.g. form embankment].	m ³			
3.2.6	F123.4	Excavate in rock material by pneumatic tools to [e.g. form embankment].	m ³			
3.3		<u>EXCAVATE, LOAD, HAUL AND DISPOSE</u>				
		<u>Cut and Dispose</u>				
		Excavation in cut shall be deemed to include trimming and preparation of excavated surface and transportation from source to place of disposal.				
3.3.1	F131.1	Excavate in earth material to disposal site approved by the S.O./P.D.	m ³			
3.3.2	F131.2	Excavate in earth material to disposal site approved by the S.O./P.D. [Rate to include compaction at disposal site].	m ³			
		Page Total carried to Summary of Bill No. 3				

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PROJECT :

BILL NO. 3 - EARTHWORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
3.3.3	F131.3	Excavate in earth material to disposal site approved by the S.O./P.D outside of boundary - contractor dump site.	m ³			
3.3.4	F132	Excavate in natural hard material by ripper unit to disposal site approved by the S.O./P.D.	m ³			
3.3.5	F133.1	Excavate in rock by controlled blasting to disposal site approved by the S.O./P.D.	m ³			
3.3.6	F133.2	Excavate in rock by open blasting to disposal site approved by the S.O./P.D.	m ³			
3.3.7	F133.3	Excavate in rock material by hydraulic rock breaker to disposal site approved by the S.O./P.D.	m ³			
3.3.8	F134	Excavate in artificial hard material by hydraulic rock breaker to disposal site approved by the S.O./P.D.	m ³			
3.3.9	F135	Excavate in unsuitable material and disposed to the Contractor's dumpsite as approved by the S.O./P.D.	m ³			
3.4		<u>EXCAVATION FOR FOUNDATION</u> Excavation for foundation shall include upholding sides of excavation, preparation of excavated surface, additional excavation to provide working space and removal of dead services (e.g. culvert, pile embankment).				
3.4.1	F141	Excavate in earth material commencing from platform level to required depth.	m ³			
3.4.2	F142	Excavate in natural hard material using ripper unit commencing from platform level to required depth.	m ³			
3.4.3	F143	Excavate in rock using [e.g. hydraulic rock breaker] commencing from platform level to required depth.	m ³			
3.4.4	F144	Excavate in artificial hard material commencing from platform level to required depth.	m ³			
3.4.5	F145	Excavate in unsuitable material to required depth.	m ³			
3.4.6	F150	Excavate under water from river bed to required level. Rate shall include all necessary temporary work.	m ³			
		Page Total carried to Summary of Bill No. 3				

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PROJECT :

BILL NO. 3 - EARTHWORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
3.5		<u>EXCAVATION BY DREDGING</u>				
3.5.1	F161	Provision of plant and equipment for dredging work. Rate to include mobilisation and demobilisation.	sum			
3.5.2	F162	Excavation by dredging to limits as shown in Drawing. Rate shall include transportation from source to place of disposal and mopping up of silt which accumulates after the Final Surface has been reached.	m ³			
3.6		<u>SPREAD, GRADE AND COMPACT</u>				
		<u>Filling</u>				
		The following items for filling shall include compaction, testing and confirmation material and additional filling necessitated by settlement or penetration into underlying material as applicable.				
3.6.1	F310	<u>General</u>				
3.6.1.1	F311	Using suitable excavated material as per Specification.	m ³			
3.6.1.2	F312.1	Imported material from Contactor's own source as per Specification.	m ³			
3.6.1.3	F312.2	Imported material from borrow pit as shown in the drawing as per Specification.	m ³			
3.6.1.4	F312.3	Imported granular material from contractor own source as per Drawings.	m ³			
3.6.1.5	F312.4	Imported sand from contractor own source as per Drawings.	m ³			
3.6.1.6	F313	Grade C20 mass concrete.	m ³			
3.6.2	F320	<u>Embankments</u>				
3.6.2.1	F321	Using suitable excavated material as per Specification to form embankment. Rate to include formation of benches.	m ³			
3.6.2.2	F322	Imported material from Contactor's own source as per Specification to form embankment. Rate to include formation of benches.	m ³			
3.6.2.3	F324	Other stated material – granular material as per Drawings to form drainage layer to embankment.	m ³			
3.6.2.4	F323	Grade C20 mass concrete.	m ³			
		Page Total carried to Summary of Bill No. 3				

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PROJECT :

BILL NO. 3 - EARTHWORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
3.6.3	F300	<u>Replacement</u>				
3.6.3.1	F331	Replace unsuitable material with suitable excavated material.	m ³			
3.6.3.2	F332	Replace unsuitable material with imported material from Contactor's own source.	m ³			
3.6.3.3	F334.1	Replace unsuitable material with granular material as per Drawings.	m ³			
3.6.3.4	F334.2	Replace unsuitable material with sand as per Drawings.	m ³			
3.6.3.5	F350	Filling to embankment below water level.	m ³			
3.6.4	F400	<u>Filling Ancillaries</u>				
3.6.4.1	F410.1	Supply and lay nonwoven geotextile in according to Drawings.	m ²			
3.7	F500	<u>LANDSCAPING</u>				
		Items for landscaping shall be deemed to include digging, planting media, bedding, staking, protection, watering, weeding, required fertilising, and replacement of dead item until the vegetation is established.				
3.7.1	F510.1	Spot turfing to flat areas.	m ²			
3.7.2	F510.2	Close turfing to slopes as per Specification. Rate to include pegging down with stakes.	m ²			
3.7.3	F520.1	Hydroseeding as per Specification.	m ²			
3.7.4	F520.2	Hydroseeding with Bio-degradable erosion control blanket or equivalent.	m ²			
3.7.5	F530	Bio-degradable erosion control blanket to slope of embankment with fastening hook at [...mm] spacing. Rate to include fastening hook and netting.	m ²			
3.7.6	F540.1	Vertiver grass or equivalent at 250 mm spacing (in group of 3 rows).	m			
3.7.7	F540.2	Creepers or equivalent at 250 mm spacing (in group of 3 rows).	m			
3.7.8	F550	Trees of the (...) species with minimum girth of [200 mm] and [3 m] tall.	nr			
		Page Total carried to Summary of Bill No. 3				

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PROJECT :

BILL NO. 3 - EARTHWORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		Summary of Bill No. 3 : Earthworks				
		Page BQ3 - 1/5				
		Page BQ3 - 2/5				
		Page BQ3 - 3/5				
		Page BQ3 - 4/5				
		Total of Bill No.3 carried to Grand Summary				

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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.1		<u>TEMPORARY WORKS</u>				
	A529	Provide, erect, maintain and remove from site on completion of works temporary crossing all in accordance with the relevant sub section of the specification for the proposed culverts.	sum			
4.2		<u>NEW PIPE CULVERT</u>				
4.2.1	P100	<u>Drain Excavation</u>				
		Drain excavation shall be deemed to include preparation of surfaces, double handling, disposal of surplus excavated material, upholding sides of excavation, allowance for joints, backfilling, and removal of dead services and reinstatement of Original Surface unless covered by separate items.				
4.2.1.1	P111	In earth for [e.g. 600 mm precast concrete block drain], depth not exceeding 1.5 m.	m ³			
4.2.1.2	P112	In earth for [e.g. 600 mm precast concrete block drain], depth 1.5 – 2.0 m.	m ³			
4.2.1.3	P113	In earth for [e.g. 600 mm precast concrete block drain], depth 2.0 – 2.5 m.	m ³			
4.2.1.4	P114	In earth for [e.g. 600 mm precast concrete block drain], depth 2.5 – 3.0 m.	m ³			
4.2.1.5	P115	In earth for [e.g. 600 mm precast concrete block drain], depth exceeding 3.0 m.	m ³			
4.2.1.6	P124	<u>Extras to Drain Excavation</u> Rock.	m ³			
4.2.2		<u>Type of Foundation</u>				
4.2.2.1		<u>Type A - Reinforced Concrete Cradle Foundation</u>				
	1100	<u>In Situ Concrete Design Mix</u> Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
4.2.2.1.1	1111	<u>Grade C15 Concrete</u> Mass concrete blinding, [e.g. 50 mm] thick [e.g. to foundation].	m ²			
		Page Total carried to Summary of Bill No. 4				

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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
	1400	<u>Formwork</u> Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.				
4.2.2.1.2	1411	<u>Sides</u> F1: rough finish to bases.	m ²			
	1500	<u>Reinforcement</u> Rate for reinforcement shall be deemed to include labour for cutting, bending, and placing.				
4.2.2.1.3	1550	High tensile steel fabric – (e.g. mesh A252 (A8), 3.95 kg/m ²).	m ²			
4.2.2.1.4	1122	<u>Grade C20 Concrete</u> Mass concrete benching to foundation.	m ³			
4.2.2.2		<u>Type B - Normal Foundation</u> Fill, spread, grade and compact granular fill material.				
4.2.2.2.1	F312.1	Imported material – sand material as per Specification.	m ³			
4.2.2.2.2	F312.2	Imported material – granular material as per Specification.	m ³			
4.2.2.3		<u>Type B1 - Soft Foundation</u> Fill, spread, grade and compact granular fill material.				
4.2.2.3.1	F312.1	Imported material – sand material as per Specification.	m ³			
4.2.2.3.2	F312.2	Imported material – granular material as per Specification.	m ³			
4.2.2.4		<u>Type B2 - Hard Foundation</u> Fill, spread, grade and compact granular fill material.				
4.2.2.4.1	F312.1	Imported material – sand material as per Specification.	m ³			
4.2.2.4.2	F312.2	Imported material – granular material as per Specification.	m ³			
		Page Total carried to Summary of Bill No. 4				

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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.2.2.5		<u>Pile Foundation</u>				
4.2.2.5.1	H110	Provision of all necessary piling plant and equipment, transportation to the Site, handling, assembling, and removal off the Site after completion of operation.	sum			
4.2.2.5.2	H120	Moving and handling of all piling plant and equipment within the Site and from location to location as often as is, and whenever necessary for the execution of the whole piling operation.	sum			
4.2.2.5.3	H130	Temporary staging [e.g. for piling work at the banks of Sg. (.....)].	sum			
		<u>Precast Reinforced Concrete Piles</u>				
		Items for piling work shall be deemed to include piling records and disposal of excavated and surplus material.				
4.2.2.5.4		[..... mm] C.... square precast reinforced concrete piles with a working load of [.....] kN.				
4.2.2.5.4.1	H251.1	Supply initial piles with (Type of shoes) of [.....m] length.	nr			
4.2.2.5.4.2	H251.2	Supply extension piles of [.....m] length.	nr			
4.2.2.5.4.3	H252.1	Depth driven.	m			
4.2.2.5.4.4	H252.2	Depth driven raked at inclination ratio of [.....].	m			
4.2.2.5.4.5	H252.3	Depth driven using jack-in method.	m			
4.2.2.5.4.6	H254	Jointing with butt weld all round as shown in the Drawing.	nr			
4.2.2.5.4.7	H256	Cut-off piles. Rate to include preparing heads.	nr			
	1100	<u>In Situ Concrete Design Mix</u>				
		Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
		<u>Grade C15 Concrete</u>				
4.2.2.5.5	1111	Mass concrete blinding, [e.g. 50 mm] thick [e.g. to pile cap].	m ²			
		Page Total carried to Summary of Bill No. 4				

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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		<u>Formwork to Sides</u> Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.				
4.2.2.5.6	I411	F1: rough finish to foundation.	m ²			
		<u>Reinforcement</u> Rate for reinforcement shall be deemed to include labour for cutting, bending, and placing.				
4.2.2.5.7	I550.4	High tensile steel fabric – mesh A252 (e.g. A8, 3.95 kg/m ²).	m ²			
		<u>Grade C20 Concrete</u>				
4.2.2.5.8	I122	Mass concrete benching to foundation.	m ³			
4.2.3	P600	<u>Pipe Culvert</u> Item for culverts shall be deemed to include all joints, water stop, concrete base, and concrete surround unless otherwise stated.				
4.2.3.1	P611	[e.g. 1200 mm] diameter single precast concrete pipe culvert, Class [e.g. X] in standard length of 1 m.	m			
4.2.3.2	P612	[e.g. 1200 mm] diameter twin precast concrete pipe culvert, Class [e.g. X] in standard length of 1 m.	m			
4.2.3.3	P613	[e.g. 1200 mm] diameter triple precast concrete pipe culvert, Class [e.g. X] in standard length of 1 m.	m			
4.2.4		<u>Concrete Surround Pipe Culvert</u> <u>Formwork to Sides</u> Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.				
4.2.4.1	I411	F1: rough finish to pipe culvert.	m ²			
		<u>Grade C20 Concrete</u>				
4.2.4.2	I222.3	Mass concrete surround to pipes.	m ³			
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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.2.5	P900	<u>Inlet/Outlet Structures</u> Reinforced concrete headwall, wingwall, base slab including excavation work, formworks, concrete, reinforcement, lean concrete and shoring for:-				
4.2.5.1	P900.1	[..... mm] diameter single pipe culvert.	nr			
4.2.5.2	P900.2	Twin [..... mm] diameter pipe culvert.	nr			
4.2.5.3	P900.3	Triple [..... mm] diameter pipe culvert.	nr			
4.2.6		<u>Fill Material</u> The following items for filling shall include compaction, and additional filling necessitated by settlement or penetration into underlying material as applicable.				
4.2.6.1	F311	Using suitable excavated material to grading limits as per Specification.	m ³			
4.2.6.2	F312.1	Imported material – sand material as per Specification.	m ³			
4.2.6.3	F312.2	Imported material – granular material as per Specification.	m ³			
4.3		<u>EXTENSION OF EXISTING PIPE CULVERT</u>				
4.3.1		<u>Demolition and Hacking</u>				
4.3.1.1	E412	Below ground – [(e.g. <i>Precast concrete box culverts</i>) including headwall, wingwall and foundation (e.g. <i>20 m long x 3 m wide x 2 m deep</i>)].	nr			
4.3.2		<u>Earthworks</u> Drain excavation shall be deemed to include preparation of surfaces, double handling, disposal of surplus excavated material, upholding sides of excavation, allowance for joints, backfilling, and removal of dead services and reinstatement of Original Surface unless covered by separate items.				
4.3.2.1	P111	In earth for [e.g. <i>600 mm precast concrete block drain</i>], depth not exceeding 1.5 m.	m ³			
4.3.2.2	P112	In earth for [e.g. <i>600 mm precast concrete block drain</i>], depth 1.5 – 2.0 m.	m ³			
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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.3.2.3	P113	In earth for [e.g. 600 mm precast concrete block drain], depth 2.0 – 2.5 m.	m ³			
4.3.2.4	P114	In earth for [e.g. 600 mm precast concrete block drain], depth 2.5 – 3.0 m.	m ³			
4.3.2.5	P115	In earth for [e.g. 600 mm precast concrete block drain], depth exceeding 3.0 m.	m ³			
4.3.2.6	P124	<u>Extras to Drain Excavation</u> Rock.	m ³			
4.3.3		<u>Type of Foundation</u>				
4.3.3.1		<u>Type A - Reinforced Concrete Cradle Foundation</u>				
	I100	<u>In Situ Concrete Design Mix</u> Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
4.3.3.1.1	I111	<u>Grade C15 Concrete</u> Mass concrete blinding, [e.g. 50 mm] thick [e.g. to foundation].	m ²			
	I400	<u>Formwork</u> Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.				
4.3.3.1.2	I411	<u>Sides</u> F1: rough finish to bases.	m ²			
	I500	<u>Reinforcement</u> Rate for reinforcement shall be deemed to include labour for cutting, bending, and placing.				
4.3.3.1.3	I550	High tensile steel fabric – (e.g. mesh A252 (A8), 3.95 kg/m ²).	m ²			
4.3.3.1.4	I122	<u>Grade C20 Concrete</u> Mass concrete benching to foundation.	m ³			
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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.3.3.2		<u>Type B - Normal Foundation</u> Fill, spread, grade and compact granular fill material.				
4.3.3.2.1	F312.1	Imported material – sand material as per Specification.	m ³			
4.3.3.2.2	F312.2	Imported material – granular material as per Specification.	m ³			
4.3.3.3		<u>Type B1 - Soft Foundation</u> Fill, spread, grade and compact granular fill material.				
4.3.3.3.1	F312.1	Imported material – sand material as per Specification.	m ³			
4.3.3.3.2	F312.2	Imported material – granular material as per Specification.	m ³			
4.3.3.4		<u>Type B2 - Hard Foundation</u> Fill, spread, grade and compact granular fill material.				
4.3.3.4.1	F312.1	Imported material – sand material as per Specification.	m ³			
4.3.3.4.2	F312.2	Imported material – granular material as per Specification.	m ³			
4.3.3.5		<u>Pile Foundation</u>				
4.3.3.5.1	H110	Provision of all necessary piling plant and equipment, transportation to the Site, handling, assembling, and removal off the Site after completion of operation.	sum			
4.3.3.5.2	H120	Moving and handling of all piling plant and equipment within the Site and from location to location as often as is, and whenever necessary for the execution of the whole piling operation.	sum			
4.3.3.5.3	H130	Temporary staging [e.g. for piling work at the banks of Sg. (...)].	sum			
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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		<u>Precast Reinforced Concrete Piles</u>				
		Items for piling work shall be deemed to include piling records and disposal of excavated and surplus material.				
4.3.3.5.4		[..... mm] C.... square precast reinforced concrete piles with a working load of [....] kN.				
4.3.3.5.4.1	H251.1	Supply initial piles with (Type of shoes) of [.....m] length.	nr			
4.3.3.5.4.2	H251.2	Supply extension piles of [.....m] length.	nr			
4.3.3.5.4.3	H252.1	Depth driven.	m			
4.3.3.5.4.4	H252.2	Depth driven raked at inclination ratio of [.....].	m			
4.3.3.5.4.5	H252.3	Depth driven using jack-in method.	m			
4.3.3.5.4.6	H254	Jointing with butt weld all round as shown in the Drawing.	nr			
4.3.3.5.4.7	H256	Cut-off piles. Rate to include preparing heads.	nr			
	I100	<u>In Situ Concrete Design Mix</u>				
		Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
		<u>Grade C15 Concrete</u>				
4.3.3.5.5	I111	Mass concrete blinding, [e.g. 50 mm] thick [e.g. to pile cap].	m ²			
		<u>Formwork to Sides</u>				
		Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.				
4.3.3.5.6	I411	F1: rough finish to bases.	m ²			
		<u>Reinforcement</u>				
		Rate for reinforcement shall be deemed to include labour for cutting, bending, and placing.				
4.3.3.5.7	I550	High tensile steel fabric – (e.g. mesh A252 (A8), 3.95 kg/m ²).	m ²			
		<u>Grade C20 Concrete</u>				
4.3.3.5.8	I122	Mass concrete benching to foundation.	m ³			
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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.3.4	P600	<u>Pipe Culvert</u> Item for culverts shall be deemed to include all joints, water stop, concrete base, and concrete surround unless otherwise stated.				
4.3.4.1	P611	[e.g. 1200 mm] diameter single precast concrete pipe culvert, Class [e.g. X] in standard length of 1 m.	m			
4.3.4.2	P612	[e.g. 1200 mm] diameter twin precast concrete pipe culvert, Class [e.g. X] in standard length of 1 m.	m			
4.3.4.3	P613	[e.g. 1200 mm] diameter triple precast concrete pipe culvert, Class [e.g. X] in standard length of 1 m.	m			
4.3.5		<u>Concrete Surround Pipe Culvert</u> <u>Formwork to Sides</u> Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.				
4.3.5.1	I411	F1: rough finish to pipe culvert.	m ²			
4.3.5.2	I222	<u>Grade C20 Concrete</u> Mass concrete surround to pipes.	m ³			
4.3.6		<u>Inlet/Outlet Structures</u> Reinforced concrete headwall, wingwall, base slab including excavation work, formworks, concrete, reinforcement, lean concrete and shoring for:-				
4.3.6.1	P900.1	[..... mm] diameter single pipe culvert.	nr			
4.3.6.2	P900.2	Twin [..... mm] diameter pipe culvert.	nr			
4.3.6.3	P900.3	Triple [..... mm] diameter pipe culvert.	nr			
4.3.7		<u>Fill Material</u> The following items for filling shall include compaction, and additional filling necessitated by settlement or penetration into underlying material as applicable.				
4.3.7.1	F311	Using suitable excavated material to grading limits as per Specification.	m ³			
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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.3.7.2	F312.1	Imported material – sand material as per Specification.	m ³			
4.3.7.3	F312.2	Imported material – granular material as per Specification.	m ³			
4.4		<u>NEW PRECAST BOX CULVERT FOR SIZE < 3.0M WIDE</u>				
4.4.1		<u>Earthworks</u>				
		Drain excavation shall be deemed to include preparation of surfaces, double handling, disposal of surplus excavated material, upholding sides of excavation, allowance for joints, backfilling, and removal of dead services and reinstatement of Original Surface unless covered by separate items.				
4.4.1.1	P111	In earth for [e.g. 600 mm precast concrete block drain], depth not exceeding 1.5 m.	m ³			
4.4.1.2	P112	In earth for [e.g. 600 mm precast concrete block drain], depth 1.5 – 2.0 m.	m ³			
4.4.1.3	P113	In earth for [e.g. 600 mm precast concrete block drain], depth 2.0 – 2.5 m.	m ³			
4.4.1.4	P114	In earth for [e.g. 600 mm precast concrete block drain], depth 2.5 – 3.0 m.	m ³			
4.4.1.5	P115	In earth for [e.g. 600 mm precast concrete block drain], depth exceeding 3.0 m.	m ³			
4.4.1.6	P124	<u>Extras to Drain Excavation</u> Rock.	m ³			
4.4.2		<u>Type of Foundation</u>				
4.4.2.1		<u>Normal Foundation</u>				
		Fill, spread, grade and compact granular fill material.				
4.4.2.1.1	F312.1	Imported material – sand material as per Specification.	m ³			
4.4.2.1.2	F312.2	Imported material – granular material as per Specification.	m ³			
4.4.2.1.3	I111	<u>Grade C15 Concrete</u> Mass concrete blinding, [e.g.50 mm] thick [e.g. to foundation].	m ²			
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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.4.2.2		<u>Pile Foundation</u>				
4.4.2.2.1	H110	Provision of all necessary piling plant and equipment, transportation to the Site, handling, assembling, and removal off the Site after completion of operation.	sum			
4.4.2.2.2	H120	Moving and handling of all piling plant and equipment within the Site and from location to location as often as is, and whenever necessary for the execution of the whole piling operation.	sum			
4.4.2.2.3	H130	Temporary staging [e.g. for piling work at the banks of Sg. (.....)].	sum			
		<u>Precast Reinforced Concrete Piles</u>				
		Items for piling work shall be deemed to include piling records and disposal of excavated and surplus material.				
4.4.2.2.4		[.....mm] C.... square precast reinforced concrete piles with a working load of [....] kN.				
4.4.2.2.4.1	H251.1	Supply initial piles with (Type of shoes) of [.....m] length.	nr			
4.4.2.2.4.2	H251.2	Supply extension piles of [.....m] length.	nr			
4.4.2.2.4.3	H252.1	Depth driven.	m			
4.4.2.2.4.4	H252.2	Depth driven raked at inclination ratio of [.....].	m			
4.4.2.2.4.5	H252.3	Depth driven using jack-in method.	m			
4.4.2.2.4.6	H254	Jointing with butt weld all round as shown in the Drawing.	nr			
4.4.2.2.4.7	H256	Cut-off piles. Rate to include preparing heads.	nr			
	1100	<u>In Situ Concrete Design Mix</u>				
		Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
		<u>Grade C15 Concrete</u>				
4.4.2.2.5	1111	Mass concrete blinding, [e.g. 50 mm] thick [e.g. to pile cap].	m ²			
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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
	I400	<u>Formwork</u> Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.				
4.4.2.2.6	I411	<u>Sides</u> F1: rough finish to bases.	m ²			
	I500	<u>Reinforcement</u> Rate for reinforcement shall be deemed to include labour for cutting, bending, and placing.				
4.4.2.2.7	I550	High tensile steel fabric – (e.g. mesh A252 (A8), 3.95 kg/m ²).	m ²			
4.4.2.2.8	I122	<u>Grade C20 Concrete</u> Mass concrete benching to foundation.	m ³			
4.4.3		<u>Precast Box Culvert</u>				
4.4.3.1	P621.1	[e.g. 1200 mm x 1200 mm] single precast box culvert in standard length of 1 m.	m			
4.4.3.2	P621.2	[e.g. 1200 mm x 1200 mm] single precast box culvert with dry weather flow in standard length of 1 m.	m			
4.4.3.3	P622.1	[e.g. 1200 mm x 1200 mm] twin precast box culvert in standard length of 1 m.	m			
4.4.3.4	P622.2	[e.g. 1200 mm x 1200 mm] twin precast box culvert with dry weather flow in standard length of 1 m.	m			
4.4.3.5	P623.1	[e.g. 1200 mm x 1200 mm] triple precast box culvert in standard length of 1 m.	m			
4.4.3.6	P623.2	[e.g. 1200 mm x 1200 mm] triple precast box culvert with dry weather flow in standard length of 1 m.	m			
4.4.4		<u>Inlet/Outlet Structures</u>				
	P900	Reinforced concrete headwall, wingwall, base slab including excavation work, formworks, concrete, reinforcement, lean concrete and shoring for:-				
4.4.4.1	P900.1	[..... mm] diameter single pipe culvert.	nr			
4.4.4.2	P900.2	Twin [..... mm] diameter pipe culvert.	nr			
4.4.4.3	P900.3	Triple [..... mm] diameter pipe culvert.	nr			
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BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.4.5		<u>Fill Material</u> The following items for filling shall include compaction, and additional filling necessitated by settlement or penetration into underlying material as applicable.				
4.4.5.1	F311	Using suitable excavated material to grading limits as per Specification.	m ³			
4.4.5.2	F312.1	Imported material – sand material as per Specification.	m ³			
4.4.5.3	F312.2	Imported material – granular material as per Specification.	m ³			
4.5		<u>EXTENSION OF EXISTING PRECAST BOX CULVERT FOR SIZE < 3.0M WIDE</u>				
4.5.1		<u>Demolition and Hacking</u>				
4.5.1.1	E412	Below ground – [(e.g. <i>Precast concrete box culverts</i>) including headwall, wingwall and foundation (e.g. <i>20 m long x 3 m wide x 2 m deep</i>)].	nr			
4.5.2		<u>Earthworks</u> Drain excavation shall be deemed to include preparation of surfaces, double handling, disposal of surplus excavated material, upholding sides of excavation, allowance for joints, backfilling, and removal of dead services and reinstatement of Original Surface unless covered by separate items.				
4.5.2.1	P111	In earth for [e.g. <i>600 mm precast concrete block drain</i>], depth not exceeding 1.5 m.	m ³			
4.5.2.2	P112	In earth for [e.g. <i>600 mm precast concrete block drain</i>], depth 1.5 – 2.0 m.	m ³			
4.5.2.3	P113	In earth for [e.g. <i>600 mm precast concrete block drain</i>], depth 2.0 – 2.5 m.	m ³			
4.5.2.4	P114	In earth for [e.g. <i>600 mm precast concrete block drain</i>], depth 2.5 – 3.0 m.	m ³			
4.5.2.5	P115	In earth for [e.g. <i>600 mm precast concrete block drain</i>], depth exceeding 3.0 m.	m ³			
4.5.2.6	P124	<u>Extras to Drain Excavation</u> Rock.	m ³			
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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.5.3		<u>Type of Foundation</u>				
4.5.3.1		<u>Normal Foundation</u>				
		Fill, spread, grade and compact granular fill material.				
4.5.3.1.1	F312.1	Imported material – sand material as per Specification.	m ³			
4.5.3.1.2	F312.2	Imported material – granular material as per Specification.	m ³			
4.5.3.1.3	I111	<u>Grade C15 Concrete</u> Mass concrete blinding, [e.g. 50 mm] thick [e.g. to foundation].	m ²			
4.5.3.2		<u>Pile Foundation</u>				
4.5.3.2.1	H110	Provision of all necessary piling plant and equipment, transportation to the Site, handling, assembling, and removal off the Site after completion of operation.	sum			
4.5.3.2.2	H120	Moving and handling of all piling plant and equipment within the Site and from location to location as often as is, and whenever necessary for the execution of the whole piling operation.	sum			
4.5.3.2.3	H130	Temporary staging [e.g. for piling work at the banks of Sg. (.....)].	sum			
		<u>Precast Reinforced Concrete Piles</u>				
		Items for piling work shall be deemed to include piling records and disposal of excavated and surplus material.				
4.5.3.2.4		[.....mm] C.... square precast reinforced concrete piles with a working load of [...] kN.				
4.5.3.2.4.1	H251.1	Supply initial piles with (Type of shoes) of [.....m] length.	nr			
4.5.3.2.4.2	H251.2	Supply extension piles of [.....m] length.	nr			
4.5.3.2.4.3	H252.1	Depth driven.	m			
4.5.3.2.4.4	H252.2	Depth driven raked at inclination ratio of [.....].	m			
4.5.3.2.4.5	H252.3	Depth driven using jack-in method.	m			
4.5.3.2.4.6	H254	Jointing with butt weld all round as shown in the Drawing.	nr			
4.5.3.2.4.7	H256	Cut-off piles. Rate to include preparing heads.	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
	I100	<u>In Situ Concrete Design Mix</u> Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
4.5.3.2.5	I111	<u>Grade C15 Concrete</u> Mass concrete blinding, [e.g. 50 mm] thick [e.g. to pile cap].	m ²			
	I400	<u>Formwork</u> Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.				
4.5.3.2.6	I411	<u>Sides</u> F1: rough finish to bases.	m ²			
	I500	<u>Reinforcement</u> Rate for reinforcement shall be deemed to include labour for cutting, bending, and placing.				
4.5.3.2.7	I550	High tensile steel fabric – (e.g. mesh A252 (A8), 3.95 kg/m ²).	m ²			
4.5.3.2.8	I122	<u>Grade C20 Concrete</u> Mass concrete benching to foundation.	m ³			
4.5.4		<u>Precast Box Culvert</u>				
4.5.4.1	P621.1	[e.g. 1200 mm x 1200 mm] single precast box culvert in standard length of 1 m.	m			
4.5.4.2	P621.2	[e.g. 1200 mm x 1200 mm] single precast box culvert with dry weather flow in standard length of 1 m.	m			
4.5.4.3	P622.1	[e.g. 1200 mm x 1200 mm] twin precast box culvert in standard length of 1 m.	m			
4.5.4.4	P622.2	[e.g. 1200 mm x 1200 mm] twin precast box culvert with dry weather flow in standard length of 1 m.	m			
4.5.4.5	P623.1	[e.g. 1200 mm x 1200 mm] triple precast box culvert in standard length of 1 m.	m			
4.5.4.6	P623.2	[e.g. 1200 mm x 1200 mm] triple precast box culvert with dry weather flow in standard length of 1 m.	m			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.5.5		<u>Inlet/Outlet Structures</u>				
	P900	Reinforced concrete headwall, wingwall, base slab including excavation work, formworks, concrete, reinforcement, lean concrete and shoring for:-				
4.5.5.1	P900.1	[..... mm] diameter single pipe culvert.	nr			
4.5.5.2	P900.2	Twin [..... mm] diameter pipe culvert.	nr			
4.5.5.3	P900.3	Triple [..... mm] diameter pipe culvert.	nr			
4.5.6		<u>Fill Material</u>				
		The following items for filling shall include compaction, and additional filling necessitated by settlement or penetration into underlying material as applicable.				
4.5.6.1	F311	Using suitable excavated material to grading limits as per Specification.	m ³			
4.5.6.2	F312.1	Imported material – sand material as per Specification.	m ³			
4.5.6.3	F312.2	Imported material – granular material as per Specification.	m ³			
4.6		<u>CAST INSITU BOX CULVERT FOR SIZE < 3.0M WIDE</u>				
4.6.1		<u>Earthworks</u>				
		Drain excavation shall be deemed to include preparation of surfaces, double handling, disposal of surplus excavated material, upholding sides of excavation, allowance for joints, backfilling, and removal of dead services and reinstatement of Original Surface unless covered by separate items.				
4.6.1.1	P111	In earth for [e.g. 600 mm precast concrete block drain], depth not exceeding 1.5 m.	m ³			
4.6.1.2	P112	In earth for [e.g. 600 mm precast concrete block drain], depth 1.5 – 2.0 m.	m ³			
4.6.1.3	P113	In earth for [e.g. 600 mm precast concrete block drain], depth 2.0 – 2.5 m.	m ³			
4.6.1.4	P114	In earth for [e.g. 600 mm precast concrete block drain], depth 2.5 – 3.0 m.	m ³			
4.6.1.5	P115	In earth for [e.g. 600 mm precast concrete block drain], depth exceeding 3.0 m.	m ³			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.6.1.6	P124	<u>Extras to Drain Excavation</u> Rock.	m ³			
4.6.2		<u>Type of Foundation</u>				
4.6.2.1		<u>Normal Foundation</u>				
		Fill, spread, grade and compact granular fill material.				
4.6.2.1.1	F312.1	Imported material – sand material as per Specification.	m ³			
4.6.2.1.2	F312.2	Imported material – granular material as per Specification.	m ³			
4.6.2.1.3	I111	<u>Grade C15 Concrete</u> Mass concrete blinding, [e.g. 50 mm] thick [e.g. to foundation].	m ²			
4.6.2.2		<u>Pile Foundation</u>				
4.6.2.2.1	H110	Provision of all necessary piling plant and equipment, transportation to the Site, handling, assembling, and removal off the Site after completion of operation.	sum			
4.6.2.2.2	H120	Moving and handling of all piling plant and equipment within the Site and from location to location as often as is, and whenever necessary for the execution of the whole piling operation.	sum			
4.6.2.2.3	H130	Temporary staging [e.g. for piling work at the banks of Sg. (.....)].	sum			
		<u>Precast Reinforced Concrete Piles</u>				
		Items for piling work shall be deemed to include piling records and disposal of excavated and surplus material.				
4.6.2.2.4		[.....mm] C.... square precast reinforced concrete piles with a working load of [....] kN.				
4.6.2.2.4.1	H251.1	Supply initial piles with (Type of shoes) of [.....m] length.	nr			
4.6.2.2.4.2	H251.2	Supply extension piles of [.... m] length.	nr			
4.6.2.2.4.3	H252.1	Depth driven.	m			
4.6.2.2.4.4	H252.2	Depth driven raked at inclination ratio of [.....].	m			
4.6.2.2.4.5	H252.3	Depth driven using jack-in method.	m			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.6.2.2.4.6	H254	Jointing with butt weld all round as shown in the Drawing.	nr			
4.6.2.2.4.7	H256	Cut-off piles. Rate to include preparing heads.	nr			
	1100	<u>In Situ Concrete Design Mix</u> Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
4.6.2.2.5	I111	<u>Grade C15 Concrete</u> Mass concrete blinding, [e.g. 50 mm] thick [e.g. to pile cap].	m ²			
	I400	<u>Formwork</u> Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.				
4.6.2.2.6	I411	<u>Sides</u> F1: rough finish to bases.	m ²			
	I500	<u>Reinforcement</u> Rate for reinforcement shall be deemed to include labour for cutting, bending, and placing.				
4.6.2.2.7	I550	High tensile steel fabric – (e.g. mesh A252 (A8), 3.95 kg/m ²).	m ²			
4.6.2.2.8	I122	<u>Grade C20 Concrete</u> Mass concrete benching to foundation.	m ³			
4.6.3	I400	<u>Formwork</u> Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.				
4.6.3.1	I414	<u>Sides</u> F2: fair finish to walls.	m ²			
4.6.4	I500	<u>Reinforcement</u> Rate for reinforcement shall be deemed to include labour for cutting, bending, and placing.				
4.6.4.1		<u>High Tensile Bars for insitu box culvert</u>				
4.6.4.1.1	I523	Nominal diameter: 12 mm.	t			
4.6.4.1.2	I524	Nominal diameter: 16 mm.	t			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.6.4.1.3	I525	Nominal diameter: 20 mm.	t			
4.6.4.1.4	I526	Nominal diameter: 25 mm.	t			
4.6.4.1.5	I527	Nominal diameter: 32 mm.	t			
4.6.4.2		<u>Headwall and wingwall</u>				
4.6.4.2.1		<u>High Tensile Bars</u>				
4.6.4.2.1.1	I522	Nominal diameter: 10 mm.	t			
4.6.4.2.1.2	I523	Nominal diameter: 12 mm.	t			
4.6.4.2.1.3	I526	Nominal diameter: 25 mm.	t			
4.6.4.2.2		<u>Mild Steel Bars</u>				
4.6.4.2.2.1	I513	Nominal diameter: 12 mm.	t			
4.6.4.2.2.2	I516	Nominal diameter: 16 mm.	t			
	I100	<u>In Situ Concrete Design Mix</u> Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
4.6.5	I175	<u>Grade C40 Concrete</u> Reinforced concrete at box culvert, wingwall and headwall.	m ³			
4.6.6	I614	<u>Waterstop</u> [e.g.230 mm] wide rubber waterstop. Rate to include cutting and jointing of waterstops and provision of special fittings at angles and junctions.	m			
4.6.7	I616	<u>Dowel Bar</u> Provide T32 mm diameter steel dowel bars 600 mm long at 300 mm centres as in the Drawing.	nr			
4.6.8		<u>Inlet/Outlet Structures</u>				
	P900	Reinforced concrete headwall, wingwall, base slab including excavation work, formworks, concrete, reinforcement, lean concrete and shoring for:-				
4.6.8.1	P900.1	[..... mm] diameter single pipe culvert.	nr			
4.6.8.2	P900.2	[Twin mm] diameter pipe culvert.	nr			
4.6.8.3	P900.3	[Triple mm] diameter pipe culvert.	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.6.9		<u>Fill Material</u> The following items for filling shall include compaction, and additional filling necessitated by settlement or penetration into underlying material as applicable.				
4.6.9.1	F311	Using suitable excavated material to grading limits as per Specification.	m ³			
4.6.9.2	F312.1	Imported material – sand material as per Specification.	m ³			
4.6.9.3	F312.2	Imported material – granular material as per Specification.	m ³			
4.7		<u>EXTENSION OF EXISTING CAST INSITU BOX CULVERT FOR SIZE < 3.0M WIDE</u>				
4.7.1		<u>Demolition and Hacking</u>				
4.7.1.1	E412	Below ground – [(e.g. <i>Precast concrete box culverts</i>) including headwall, wingwall and foundation (e.g. <i>20 m long x 3 m wide x 2 m deep</i>)].	nr			
4.7.2		<u>Earthworks</u> Drain excavation shall be deemed to include preparation of surfaces, double handling, disposal of surplus excavated material, upholding sides of excavation, allowance for joints, backfilling, and removal of dead services and reinstatement of Original Surface unless covered by separate items.				
4.7.2.1	P111	In earth for [e.g. <i>600 mm precast concrete block drain</i>], depth not exceeding 1.5 m.	m ³			
4.7.2.2	P112	In earth for [e.g. <i>600 mm precast concrete block drain</i>], depth 1.5 – 2.0 m.	m ³			
4.7.2.3	P113	In earth for [e.g. <i>600 mm precast concrete block drain</i>], depth 2.0 – 2.5 m.	m ³			
4.7.2.4	P114	In earth for [e.g. <i>600 mm precast concrete block drain</i>], depth 2.5 – 3.0 m.	m ³			
4.7.2.5	P115	In earth for [e.g. <i>600 mm precast concrete block drain</i>], depth exceeding 3.0 m.	m ³			
4.7.2.6	P124	<u>Extras to Drain Excavation</u> Rock.	m ³			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.7.3		<u>Type of Foundation</u>				
4.7.3.1		<u>Normal Foundation</u>				
		Fill, spread, grade and compact granular fill material.				
4.7.3.1.1	F312.1	Imported material – sand material as per Specification.	m ³			
4.7.3.1.2	F312.2	Imported material – granular material as per Specification.	m ³			
4.7.3.1.3	I111	<u>Grade C15 Concrete</u> Mass concrete blinding, [e.g. 50 mm] thick [e.g. to foundation].	m ²			
4.7.3.2		<u>Pile Foundation</u>				
4.7.3.2.1	H110	Provision of all necessary piling plant and equipment, transportation to the Site, handling, assembling, and removal off the Site after completion of operation.	sum			
4.7.3.2.2	H120	Moving and handling of all piling plant and equipment within the Site and from location to location as often as is, and whenever necessary for the execution of the whole piling operation.	sum			
4.7.3.2.3	H130	Temporary staging [e.g. for piling work at the banks of Sg. (.....)].	sum			
		<u>Precast Reinforced Concrete Piles</u>				
		Items for piling work shall be deemed to include piling records and disposal of excavated and surplus material.				
4.7.3.2.4		[.....mm] C.... square precast reinforced concrete piles with a working load of [....] kN.				
4.7.3.2.4.1	H251.1	Supply initial piles with (Type of shoes) of [.....m] length.	nr			
4.7.3.2.4.2	H251.2	Supply extension piles of [.....m] length.	nr			
4.7.3.2.4.3	H252.1	Depth driven.	m			
4.7.3.2.4.4	H252.2	Depth driven raked at inclination ratio of [.....].	m			
4.7.3.2.4.5	H252.3	Depth driven using jack-in method.	m			
4.7.3.2.4.6	H254	Jointing with butt weld all round as shown in the Drawing.	nr			
4.7.3.2.4.7	H256	Cut-off piles. Rate to include preparing heads.	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
	1100	<u>In Situ Concrete Design Mix</u> Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
4.7.3.2.5	1111	<u>Grade C15 Concrete</u> Mass concrete blinding, [e.g. 50 mm] thick [e.g. to pile cap].	m ²			
4.7.4	1400	<u>Formwork</u> Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.				
4.7.4.1	1414.1	<u>Sides</u> F1: rough finish to bases.	m ²			
4.7.4.2	1414.2	F2: fair finish to walls.	m ²			
4.7.5	1500	<u>Reinforcement</u> Rate for reinforcement shall be deemed to include labour for cutting, bending, and placing.				
4.7.5.1		<u>High Tensile Bars for insitu box culvert</u>				
4.7.5.1.1	1523	Nominal diameter: 12 mm.	t			
4.7.5.1.2	1524	Nominal diameter: 16 mm.	t			
4.7.5.1.3	1525	Nominal diameter: 20 mm.	t			
4.7.5.1.4	1526	Nominal diameter: 25 mm.	t			
4.7.5.1.5	1527	Nominal diameter: 32 mm.	t			
4.7.5.2		<u>Headwall and wingwall</u>				
4.7.5.2.1		<u>High Tensile Bars</u>				
4.7.5.2.1.1	1522	Nominal diameter: 10 mm.	t			
4.7.5.2.1.2	1523	Nominal diameter: 12 mm.	t			
4.7.5.2.1.3	1526	Nominal diameter: 25 mm.	t			
4.7.5.2.2		<u>Mild Steel Bars</u>				
4.7.5.2.2.1	1513	Nominal diameter: 12 mm.	t			
4.7.5.2.2.2	1516	Nominal diameter: 16 mm.	t			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
	I100	<u>In Situ Concrete Design Mix</u> Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
4.7.6	I175	<u>Grade C40 Concrete</u> Reinforced concrete at box culvert, wingwall and headwall.	m ³			
4.7.7	I614	<u>Waterstop</u> [e.g.230 mm] wide rubber waterstop. Rate to include cutting and jointing of waterstops and provision of special fittings at angles and junctions.	m			
4.7.8	I616	<u>Dowel Bar</u> Provide T32 mm diameter steel dowel bars 600 mm long at 300 mm centres as in the Drawings.	nr			
4.7.9		<u>Inlet/Outlet Structures</u>				
	P900	Reinforced concrete headwall,wingwall,base slab including excavation work, formworks, concrete, reinforcement, lean concrete and shoring for:-				
4.7.9.1	P900.1	[..... mm x mm] size box culvert.	nr			
4.7.9.2	P900.2	Twin [..... mm x mm] size box culvert.	nr			
4.7.9.3	P900.3	Triple [..... mm x mm] size box culvert.	nr			
4.7.10		<u>Fill Material</u> The following items for filling shall include compaction, and additional filling necessitated by settlement or penetration into underlying material as applicable.				
4.7.10.1	F311	Using suitable excavated material to grading limits as per Specification.	m ³			
4.7.10.2	F312.1	Imported material – sand material as per Specification.	m ³			
4.7.10.3	F312.2	Imported material – granular material as per Specification.	m ³			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.8	P200	<u>SURFACE DRAINS</u> Item for surface drains shall be deemed to include cement jointing, sand and concrete beddings, shuttering, struts, and weepholes.				
4.8.1		<u>Earthworks</u> Drain excavation shall be deemed to include preparation of surfaces, double handling, disposal of surplus excavated material, upholding sides of excavation, allowance for joints, backfilling, and removal of dead services and reinstatement of Original Surface unless covered by separate items.				
4.8.1.1	P111	In earth for [e.g.600 mm precast concrete block drain], depth not exceeding 1.5 m.	m ³			
4.8.1.2	P112	In earth for [e.g.600 mm precast concrete block drain], depth not exceeding 1.5 m.	m ³			
4.8.1.3	P113	In earth for [e.g. 600 mm precast concrete block drain], depth 2.0 – 2.5 m.	m ³			
4.8.1.4	P114	In earth for [e.g. 600 mm precast concrete block drain], depth 2.5 – 3.0 m.	m ³			
4.8.1.5	P115	In earth for [e.g. 600 mm precast concrete block drain], depth exceeding 3.0 m.	m ³			
4.8.16	P124	<u>Extras to Drain Excavation</u> Rock.	m ³			
4.8.2		<u>Roadside Drains for Rural Area</u>				
4.8.2.1	P230.1	Roadside drain; unlined drain (e.g. 600 mm) wide with average (e.g. 900 mm) high Type 1 (RSD 1).	m			
4.8.2.2	P230.2	Roadside drain; cast in-situ reinforced concrete drain (e.g. 600 mm) wide with average (e.g. 900 mm) high Type 2 (RSD 2).	m			
4.8.2.3	P230.3	Roadside drain; precast reinforced concrete drain (e.g. 600 mm) wide with average (e.g. 900 mm) high Type 3 (RSD 3).	m			
4.8.2.4	P230.4	Roadside drain; natural stone mansory joint in (1:3) cement mortar flush pointed drain (e.g. 600 mm) wide x (e.g. 900 mm) high Type 4 (RSD 4).	m			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.8.3		<u>Roadside Drains for Urban Area</u>				
4.8.3.1	P230.5	Roadside drain; precast reinforced concrete drain (e.g. 600 mm) wide with average (e.g. 900 mm) high brick wall and plastering including 600 mm x 100 mm x 100 mm precast concrete struts at 6 m c/c Type U1 (RSDU 1).	m			
4.8.3.2	P230.6	Roadside drain; half round glazed earthenware drain (e.g. 600 mm) mm wide with average (e.g. 900 mm) high brick wall and plastering including 600 mm x 100 mm x 100 mm precast concrete struts at 6 m c/c Type U2 (RSDU 2).	m			
4.8.3.3	P230.7	Roadside drain; precast concrete U-shaped drain with dry weather flow; (e.g. 1200 mm wide x 1200 mm deep) including precast concrete struts at 6 m c/c.	m			
4.8.4		<u>Embankment Toe Drains</u>				
4.8.4.1	P250.1	Toe drain; unlined drain (e.g. 600 mm) wide with average (e.g. 900 mm) deep Type 1 (TD1).	m			
4.8.4.2	P250.2	Toe drain; cast in-situ reinforced concrete; (e.g. 1200 mm) wide x (e.g. 1200 mm) deep including precast concrete struts at 6 m c/c. Type 2 (TD2).	m			
4.8.4.3	P250.3	Toe drain; precast reinforced concrete; (e.g. 1200 mm) wide x (e.g. 1200 mm) deep including precast concrete struts at 6 m c/c. Type 3 (TD3).	m			
4.8.4.4	P250.4	Toe drain; natural stone masonry joint (1:3) cement mortar, flush pointed (e.g. 900 mm) wide x (e.g. 900 mm) deep. Type 4 (TD4).	m			
4.8.5		<u>Interceptor Drains</u>				
4.8.5.1	P210.1	Interceptor drains; precast concrete grade 20; (e.g. 1200 mm) wide (average) x (e.g. 600 mm) deep x (e.g. 75 mm) thick trapezoidal shape. Type 1 (ID 1).	m			
4.8.5.2	P210.2	Interceptor drains; cast in-situ reinforced concrete grade 20; (e.g. 1200 mm) wide (average) x (e.g. 600 mm) deep x (e.g. 75 mm) thick trapezoidal shape. Type 2 (ID 2).	m			
4.8.5.3	P210.3	Interceptor drains; natural stone masonry joint (1:3) cement mortar, flush pointed; (e.g. 1200mm) wide (average) x (e.g. 600 mm) deep x (e.g. 75 mm) thick trapezoidal shape. Type 3 (ID 3).	m			
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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.8.6		<u>Bench Drain</u>				
4.8.6.1	P220.1	Bench drains; cast in-situ concrete grade 20; (e.g.900 mm) wide x (e.g.500 mm) deep x (e.g.75 mm) thick V-shape.Type 1 (BC1).	m			
4.8.6.2	P220.2	Bench drains; half round glazed earthenware; (e.g.900 mm) wide x (e.g.500 mm) deep x (e.g.75 mm) thick V-shape.Type 2 (BC2).	m			
4.8.7		<u>Berm Drain</u>				
4.8.7.1	P220.1	Berm drains; cast in-situ concrete grade 20; (e.g.900 mm) wide x (e.g.500 mm) deep x (e.g.75 mm) thick V-shape.Type 1 (BF1).	m			
4.8.7.2	P220.2	Berm drains; half round glazed earthenware; (e.g.900 mm) wide x (e.g.500 mm) deep x (e.g.75 mm) thick V-shape.Type 2 (BF2).	m			
4.8.8		<u>Shoulder Drain</u>				
4.8.8.1	P290	Shoulder drain; cast in-situ concrete grade 20; (e.g.900 mm) wide x (e.g.500 mm) deep x (e.g.75 mm) thick.Type 1 (SD1).	m			
4.8.9		<u>Cascade Drain</u>				
4.8.9.1	P260.1	Cascade drains; natural stone masonry joint (1:3) cement mortar, flush pointed; (e.g.600 mm) wide x (e.g.400 mm) deep at berms [with/without handrails]. Type 1 (OD1).	m			
4.8.9.2	P260.2	Cascade drains; cast in-situ concrete block drain; (e.g.600 mm) wide x (e.g.400 mm) deep at berms with/without handrails.Type 2 (OD2).	m			
4.8.9.3	P260.3	Outfall chute; cast in-situ reinforced concrete drain; (e.g.600 mm) wide x (e.g.400 mm) deep at berms with/without handrails.Type 3 (OD3).	m			
4.8.9.4	P260.4	Cascade drains; precast reinforced concrete block drain; (e.g.600 mm) wide x (e.g.400 mm) deep at berms with/without handrails. Type 4 (OD4).	m			
4.8.10		<u>Median Drain for Rural Area</u>				
4.8.10.1	P240.1	Median drain; cast in-situ reinforced drain with half round glazed earthenware; (e.g. 600 mm) wide x (e.g. 1.2 m) deep including precast concrete struts at 6 m c/c. Type 1 (MD 1).	m			
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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.8.10.2	P240.2	Median drain; natural stone masonry joint (1:3) cement mortar, flush pointed with dry weather flow; (e.g.600 mm) wide x (e.g. 1.2 m) deep including precast concrete struts at 6 m c/c. Type 2 (MD 2).	m			
4.8.10.3	P240.3	Median drain; precast concrete [U-shaped drain with dry weather flow]; (e.g.600 mm) wide x (e.g. 1.2 m) deep including precast concrete struts at 6 m c/c. Type 3 (MD 3).	m			
4.8.11		<u>Median Drain for Urban Area</u>				
4.8.11.1	P240.4	Median drain; precast concrete [U-shaped drain with dry weather flow]; (e.g.600 mm) wide x (e.g. 1.2 m) deep including precast concrete struts at 6 m c/c. Type 1 (MDU 1).	m			
4.8.11.2	P240.5	Median drain; precast concrete [U-shaped drain with half round glazed earthenware dry weather flow]; (e.g.600 mm) wide x (e.g. 1.2 m) deep including precast concrete struts at 6 m c/c. Type 2 (MDU 2).	m			
4.8.11.3	P240.6	Median drain; precast concrete [U-shaped drain with dry weather flow]; (e.g.600 mm) wide x (e.g. 1.2 m) deep including precast concrete struts at 6 m c/c. Type 3 (MDU 3).	m			
4.8.11.4	P240.7	Median drain; precast concrete [U-shaped drain with half round glazed earthenware dry weather flow]; (e.g.600 mm) wide x (e.g. 1.2 m) deep including precast concrete struts at 6 m c/c. Type 4 (MDU 4).	m			
4.9	P300	<u>SUB-SURFACE DRAIN</u>				
4.9.1		<u>Earthworks</u> Drain excavation shall be deemed to include preparation of surfaces, double handling, disposal of surplus excavated material, upholding sides of excavation, allowance for joints, backfilling, and removal of dead services and reinstatement of Original Surface unless covered by separate items.				
4.9.1.1	P111	In earth for [e.g. 600 mm precast concrete block drain], depth not exceeding 1.5 m.	m ³			
4.9.1.2	P112	In earth for [e.g. 600 mm precast concrete block drain], depth not exceeding 1.5 m.	m ³			
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BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.9.1.3	P113	In earth for [e.g. 600 mm precast concrete block drain], depth 2.0 – 2.5 m.	m ³			
4.9.1.4	P114	In earth for [e.g. 600 mm precast concrete block drain], depth 2.5 – 3.0 m.	m ³			
4.9.1.5	P115	In earth for [e.g. 600 mm precast concrete block drain], depth exceeding 3.0 m.	m ³			
4.9.1.6	P124	<u>Extras to Drain Excavation</u> Rock.	m ³			
4.9.2		<u>Subsoil Drains</u> Item for subsurface drains shall be deemed to include geotextiles fabric, lining, and filter material.				
4.9.2.1	P310.1	Subsoil drains; (e.g. 1000 mm) deep x (e.g. 400 mm) wide; (e.g. 100 mm) diameter HDPE perforated pipe including aggregate (e.g. 20 mm – 40 mm) wrapped with geotextiles filter. Type 1 (SSD 1).	m			
4.9.2.2	P310.2	Subsoil drains; (e.g. 1000 mm) deep x (e.g. 400 mm) wide; (e.g. 150 mm) diameter porous pipe including aggregate (20 mm – 40 mm) wrapped with geotextiles filter. Type 2 (SSD 2).	m			
4.10	P700	<u>SUMPS</u>				
4.10.1		<u>Sump at Cut</u> Item for stone pitched sumps shall be deemed to include sand and concrete bedding, cement plastering, joints, backfilling, disposal of surplus and metalwork.				
4.10.1.1	P720.1	In situ concrete; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep including mild steel grating cover for [e.g. 100 kN load].	nr			
4.10.1.2	P730	Precast concrete; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep including mild steel grating cover for [e.g. 100 kN load].	nr			
4.10.1.3	P790.1	Stone pitched; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep.[Type SC1 at top].	nr			
4.10.1.4	P790.2	Stone pitched; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep .[Type SC2 at benches].	nr			
4.10.1.5	P790.3	Stone pitched; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep.[Type SC3 at shoulder].	nr			
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BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.10.2		<u>Sump at Fill</u>				
4.10.2.1	P710.1	Bricks sumps; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep .[Type SF1 at shoulder].	nr			
4.10.2.2	P710.2	Bricks sumps; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep.[Type SF2 at berms].	nr			
4.10.2.3	P710.3	Bricks sumps; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep.[Type SF3 at embankment toe].	nr			
4.10.2.4	P720.1	In situ concrete; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep including mild steel grating cover for [e.g. 100 kN load].	nr			
4.10.2.5	P730	Precast concrete; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep including mild steel grating cover for [e.g. 100 kN load].	nr			
4.10.2.6	P790	Stone pitched; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep.	nr			
4.10.3		<u>Median Sump (Rural Area)</u> Item for brick sumps shall be deemed to include excavation, sand and concrete bedding, cement plastering, joints, laying outlets concrete pipe, fix with grating, backfilling, disposal of surplus and metalwork.				
4.10.3.1	P710.1	Bricks sumps; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep including mild steel grating cover for [e.g.100 kN load]. [Type MSR1 at sag].	nr			
4.10.3.2	P710.2	Bricks sumps; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep including mild steel grating cover for [e.g.100 kN load]. [Type MSR2].	nr			
4.10.3.3	P720.1	In situ concrete; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep including mild steel grating cover for [e.g. 100 kN load].	nr			
4.10.3.4	P730	Precast concrete; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep including mild steel grating cover for [e.g. 100 kN load].	nr			
4.10.3.5	P790	Stone pitched; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep.	nr			
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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.10.4		<u>Median Sump (Urban Area)</u>				
4.10.4.1	P710.3	Bricks sumps; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep including mild steel grating cover for [e.g.100 kN load]. [Type MSU1 at culvert outlet].	nr			
4.10.4.2	P710.4	Bricks sumps; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep including mild steel grating cover for [e.g.100 kN load]. [Type SU1 at road side drain].	nr			
4.10.4.3	P720.1	In situ concrete; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep including mild steel grating cover for [e.g. 100 kN load].	nr			
4.10.4.4	P730	Precast concrete; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep including mild steel grating cover for [e.g. 100 kN load].	nr			
4.10.4.5	P790	Stone pitched; (e.g. 900 mm x 900 mm) x (e.g. 1.2 m) deep.	nr			
4.11		<u>RUBBLE RETAINING WALLS</u>				
		<u>Earthworks</u>				
4.11.1	P131	In earth for inlet and outlet structures to (e.g.1800 mm x 1800 mm) precast box culvert.	m ³			
4.11.2		<u>Foundation</u>				
	I100	<u>In-site Concrete Design Mix</u> Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
4.11.2.1	I111	<u>Grade C15 Concrete</u> Mass concrete blinding, [e.g.50 mm] thick [e.g. to footing].	m ²			
	I400	<u>Formwork</u> Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.				
4.11.2.2	I411	<u>Sides</u> F1: rough finish to footings.	m ²			
	I500	<u>Reinforcement</u> Rate for reinforcement shall be deemed to include labour for cutting, bending, and placing.				
4.11.2.3	I550	High tensile steel fabric – (e.g. mesh A252 (A8), 3.95 kg/m ²).	m ²			
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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
4.11.3	J300	<u>Masonry</u> Item for masonry shall be deemed to include fair face finish.				
4.11.3.1	J311	[e.g. 225 mm] thick grouted stone masonry jointed in [1:3] cement mortar flush pointed for vertical straight walls.	m ²			
4.12		<u>EARTH CHANNELS EXCAVATION</u> Excavation in cut shall be deemed to include trimming and preparation of excavated surface and transportation from source to place of fill or disposal.				
4.12.1	F131	Excavate in earth material commencing from [e.g. 104 m] to [e.g. 100 m] to disposal site approved by the S.O./P.D.	m ³			
4.12.2	J300	<u>Masonry</u> Item for masonry shall be deemed to include fair face finish.				
4.12.2.1	J390	[e.g. 300 mm] thick natural stone masonry jointed in [1:3] cement mortar flush pointed for channel slope walls.	m ²			
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PROJECT :

BILL NO. 4 - DRAINAGE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
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PROJECT :

BILL NO. 5 - PAVEMENT WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1		<u>FLEXIBLE PAVEMENT</u>				
		In accordance to Standard Specification for Road Works Section 4: Flexible Pavement hereafter referred to as the Specification (rate to include all the tests required).				
5.1.1		<u>NEW PAVEMENT</u>				
5.1.1.1	Q100	<u>Subgrade Preparation</u>				
5.1.1.1.1	Q110	Earth material to receive road pavement. Rate to include scarifying, levelling, and compaction of the top 300 mm of the subgrade.	m ²			
5.1.1.1.2	Q141	Stabilise [...mm] thick subgrade using minimum [...kg] of lime per cubic metre of soil, up to formation level.	m ²			
5.1.1.1.3	Q142	Stabilise [...mm] thick subgrade using minimum [...kg] of cement per cubic metre of soil, up to formation level.	m ²			
5.1.1.1.4	Q149.1	Stabilise [...mm] thick subgrade using minimum [...kg] of granular material per cubic metre of soil, up to formation level.	m ²			
5.1.1.1.5	Q149.2	Stabilise [...mm] thick subgrade using minimum [...kg] of bituminous material per cubic metre of soil, up to formation level.	m ²			
5.1.1.1.6	Q149.3	Stabilise [...mm] thick subgrade using minimum [...kg] of cement and lime per cubic metre of soil, up to formation level.	m ²			
5.1.1.1.7	Q149.4	Stabilise [...mm] thick subgrade using minimum [...kg] of [.....] per cubic metre of soil, up to formation level.	m ²			
5.1.1.2		<u>Carriageway and Paved Shoulder</u>				
5.1.1.2.1	Q200	<u>Sub-Base</u>				
5.1.1.2.1.1	Q210.1	Geotextile of the woven type as per Specification.	m ²			
5.1.1.2.1.2	Q210.2	Geotextile of the non-woven type as per Specification.	m ²			
5.1.1.2.1.3	Q220.1	[.....mm] thick granular material with a CBR value of not less than 30%, complying with grading limits of the Specification.	m ²			
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PROJECT :

BILL NO. 5 - PAVEMENT WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1.1.2.2	Q300	<u>Roadbase</u>				
5.1.1.2.2.1	Q330.1	[.....mm] thick crushed aggregates with a CBR value of not less than 80%, complying with the Specification.	m ²			
5.1.1.2.2.2	Q390.1	[...mm] thick Wet Mix Roadbase with a CBR value of not less than 80% complying with the Specification.	m ²			
5.1.1.2.2.3	Q390.2	[...mm] thick Bituminous Roadbase (AC28) complying with the Specification.	m ²			
5.1.1.2.2.4	Q390.3	[...mm] thick cement-treated Roadbase complying with the Specification.	m ²			
5.1.1.2.3	Q500	<u>Surfacing</u>				
5.1.1.2.3.1	Q540	Bituminous prime coat to be applied at a rate of 0.5 - 1.0 litre per square metre as per Specification.	m ²			
5.1.1.2.3.2	Q530.1	Bituminous tack coat to be applied at a rate of 0.25 - 0.55 litre per square metre as per Specification.	m ²			
5.1.1.2.3.3	Q530.2	Bituminous tack coat to be applied for porous asphalt at a rate of 0.5 - 1.0 litre per square metre as per Specification [RS-3K / Modified bitumen emulsion or equivalent]**.	m ²			
5.1.1.2.3.4		<u>Asphaltic Concrete</u>				
5.1.1.2.3.4 (a)	Q561	[...mm] thick Binder Course (AC28), as per Specification.	m ²			
5.1.1.2.3.4 (b)	Q562.1	[...mm] thick Wearing Course (AC10), as per Specification.	m ²			
5.1.1.2.3.4 (c)	Q562.2	[...mm] thick Wearing Course (AC14), as per Specification.	m ²			
5.1.1.2.3.5		<u>Porous Asphalt</u>				
5.1.1.2.3.5 (a)	Q550.1	[...mm] thick Porous Asphalt (Grading A), as per Specification.	m ²			
5.1.1.2.3.5 (b)	Q550.2	[...mm] thick Porous Asphalt (Grading B), as per Specification.	m ²			
5.1.1.2.3.6		<u>Stone Mastic Asphalt</u>				
5.1.1.2.3.6 (a)	Q550.3	[...mm] thick Stone Mastic Asphalt (SMA14), as per Specification.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1.1.2.3.6 (b)	Q550.4	[....mm] thick Stone Mastic Asphalt (SMA20), as per Specification.	m ²			
5.1.1.2.3.7		<u>Gap Graded Asphalt</u>				
5.1.1.2.3.7 (a)	Q550.5	[....mm] thick Gap Graded Asphalt (GPA I), as per Specification.	m ²			
5.1.1.2.3.7 (b)	Q550.6	[....mm] thick Gap Graded Asphalt (GPA II), as per Specification.	m ²			
5.1.1.2.3.8		<u>Polymer Modified Asphalt</u>				
5.1.1.2.3.8 (a)	Q550.7	[....mm] thick Polymer Modified Asphalt (AC28), as per Specification.	m ²			
5.1.1.2.3.8 (b)	Q550.8	[....mm] thick Polymer Modified Asphalt (AC10), as per Specification.	m ²			
5.1.1.2.3.8 (c)	Q550.9	[....mm] thick Polymer Modified Asphalt (AC14), as per Specification.	m ²			
5.1.1.2.3.9		<u>Surface Dressing</u>				
5.1.1.2.3.9		<u>Micro Surfacing</u>				
5.1.1.2.3.9 (a)	Q520.1	[....mm] thick modified micro surfacing of material according to the Specification.	m ²			
5.1.1.2.3.10		<u>Chip Sealing</u>				
5.1.1.2.3.10 (a)	Q520.3	Single / Double layer chip seal of material according to the Specification. [.....] as the bituminous binder for the chip seal layer for bitumen application rate [...] to [...] litres/m ² according to the Specification.	m ²			
5.1.1.2.3.10 (b)	Q520.4	Precoated cover aggregate as first Chip Seal layer.	m ²			
5.1.1.2.3.10 (c)	Q520.5	Precoated cover aggregate for second Chip Seal layer.	m ²			
5.1.1.3		<u>Median and Island</u>				
5.1.1.3.1	Q200	<u>Sub-base</u>				
5.1.1.3.1.1	Q210.1	Geotextile of the woven type as per Specification.	m ²			
5.1.1.3.1.2	Q210.2	Geotextile of the non-woven type as per Specification.	m ²			
5.1.1.3.1.3	Q220.1	[....mm] thick granular material with a CBR value of not less than 30%, complying with grading limits of the Specification.	m ²			
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PROJECT :

BILL NO. 5 - PAVEMENT WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1.1.3.2	Q300	<u>Roadbase</u>				
5.1.1.3.2.1	Q330.1	[...mm] thick crushed aggregates with a CBR value of not less than 80%, complying with the Specification.	m ²			
5.1.1.3.2.2	Q390.1	[...mm] thick Wet Mix Roadbase with a CBR value of not less than 80% complying with the Specification.	m ²			
5.1.1.3.2.3	Q390.2	[.....mm] thick Bituminous Roadbase (AC28) complying with the Specification.	m ²			
5.1.1.3.2.4	Q390.3	[...mm] thick cement-treated Roadbase complying with the Specification.	m ²			
5.1.1.3.3	Q500	<u>Surfacing</u>				
5.1.1.3.3.1	Q540	Bituminous prime coat to be applied at a rate of 0.5 - 1.0 litre per square metre as per Specification.	m ²			
5.1.1.3.3.2	Q530.1	Bituminous tack coat to be applied at a rate of 0.25 - 0.55 litre per square metre as per Specification.	m ²			
5.1.1.3.3.3	Q530.2	Bituminous tack coat to be applied for porous asphalt at a rate of 0.5 - 1.0 litre per square metre as per Specification [RS-3K / Modified bitumen emulsion or equivalent]**.	m ²			
5.1.1.3.3.4		<u>Asphaltic Concrete</u>				
5.1.1.3.3.4 (a)	Q561	[...mm] thick binder course (AC28), as per Specification.	m ²			
5.1.1.3.3.4 (b)	Q562.1	[...mm] thick wearing course (AC10), as per Specification.	m ²			
5.1.1.3.3.4 (c)	Q562.2	[...mm] thick wearing course (AC14), as per Specification.	m ²			
5.1.1.3.3.5		<u>Porous Asphalt</u>				
5.1.1.3.3.5 (a)	Q550.1	[...mm] thick Porous Asphalt (Grading A), as per Specification.	m ²			
5.1.1.3.3.5 (b)	Q550.2	[...mm] thick Porous Asphalt (Grading B), as per Specification.	m ²			
5.1.1.3.3.6		<u>Stone Mastic Asphalt</u>				
5.1.1.3.3.6 (a)	Q550.3	[...mm] thick Stone Mastic Asphalt (SMA14), as per Specification.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1.1.3.3.6 (b)	Q550.4	[...mm] thick Stone Mastic Asphalt (SMA20), as per Specification.	m ²			
5.1.1.3.3.7		<u>Gap Graded Asphalt</u>				
5.1.1.3.3.7 (a)	Q550.5	[...mm] thick Gap Graded Asphalt (GPA I), as per Specification.	m ²			
5.1.1.3.3.7 (b)	Q550.6	[...mm] thick Gap Graded Asphalt (GPA II), as per Specification.	m ²			
5.1.1.3.3.8		<u>Polymer Modified Asphalt</u>				
5.1.1.3.3.8 (a)	Q550.7	[...mm] thick Polymer Modified Asphalt (AC28), as per Specification.	m ²			
5.1.1.3.3.8 (b)	Q550.8	[...mm] thick Polymer Modified Asphalt (AC10), as per Specification.	m ²			
5.1.1.3.3.8 (c)	Q550.9	[...mm] thick Polymer Modified Asphalt (AC14), as per Specification.	m ²			
5.1.1.4		<u>Bus Lay By</u>				
5.1.1.4.1	Q200	<u>Sub-base</u>				
5.1.1.4.1.1	Q210.1	Geotextile of the woven type as per Specification.	m ²			
5.1.1.4.1.2	Q210.2	Geotextile of the non-woven type as per Specification.	m ²			
5.1.1.4.1.3	Q220.1	[...mm] thick granular material with a CBR value of not less than 30%, complying with grading limits of Specification.	m ²			
5.1.1.4.2	Q300	<u>Roadbase</u>				
5.1.1.4.2.1	Q330.1	[...mm] thick crushed aggregates with a CBR value of not less than 80%, complying with the Specification.	m ²			
5.1.1.4.2.2	Q390.1	[...mm] thick Wet Mix Roadbase with a CBR value of not less than 80% complying with the Specification.	m ²			
5.1.1.4.2.3	Q390.2	[...mm] thick Bituminous Roadbase (AC28) complying with the Specification.	m ²			
5.1.1.4.2.4	Q390.3	[...mm] thick cement-treated Roadbase complying with the Specification.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1.1.4.3	Q500	<u>Surfacing</u>				
5.1.1.4.3.1	Q540	Bituminous prime coat to be applied at a rate of 0.5 - 1.0 litre per square metre as per Specification.	m ²			
5.1.1.4.3.2	Q530.1	Bituminous tack coat to be applied at a rate of 0.25 - 0.55 litre per square metre as per Specification.	m ²			
5.1.1.4.3.3	Q530.2	Bituminous tack coat to be applied for porous asphalt at a rate of 0.5 - 1.0 litre per square metre as per Specification [RS-3K / Modified bitumen emulsion or equivalent]**.	m ²			
5.1.1.4.3.4		<u>Asphaltic Concrete</u>				
5.1.1.4.3.4 (a)	Q561	[...mm] thick binder course (AC28), as per Specification.	m ²			
5.1.1.4.3.4 (b)	Q562.1	[...mm] thick wearing course (AC10), as per Specification.	m ²			
5.1.1.4.3.4 (c)	Q562.2	[...mm] thick wearing course (AC14), as per Specification.	m ²			
5.1.1.4.3.5		<u>Porous Asphalt</u>				
5.1.1.4.3.5 (a)	Q550.1	[...mm] thick Porous Asphalt (Grading A), as per Specification.	m ²			
5.1.1.4.3.5 (b)	Q550.2	[...mm] thick Porous Asphalt (Grading B), as per Specification.	m ²			
5.1.1.4.3.6		<u>Stone Mastic Asphalt</u>				
5.1.1.4.3.6 (a)	Q550.3	[...mm] thick Stone Mastic Asphalt (SMA14) as per Specification.	m ²			
5.1.1.4.3.6 (b)	Q550.4	[...mm] thick Stone Mastic Asphalt (SMA20) as per Specification.	m ²			
5.1.1.4.3.7		<u>Gap Graded Asphalt</u>				
5.1.1.4.3.7 (a)	Q550.5	[...mm] thick Gap Graded Asphalt (GPA I), as per Specification.	m ²			
5.1.1.4.3.7 (b)	Q550.6	[...mm] thick Gap Graded Asphalt (GPA II), as per Specification.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1.1.4.3.8		<u>Polymer Modified Asphalt</u>				
5.1.1.4.3.8 (a)	Q550.7	[....mm] thick Polymer Modified Binder Course (AC28) as per Specification.	m ²			
5.1.1.4.3.8 (b)	Q550.8	[....mm] thick Polymer Modified Asphalt (AC10), as per Specification.	m ²			
5.1.1.4.3.8 (c)	Q550.9	[....mm] thick Polymer Modified Asphalt (AC14), as per Specification.	m ²			
5.1.1.5		<u>Access Road</u>				
5.1.1.5.1	Q200	<u>Sub-base</u>				
5.1.1.5.1.1	Q210.1	Geotextile of the woven type as per Specification.	m ²			
5.1.1.5.1.2	Q210.2	Geotextile of the non-woven type as per Specification.	m ²			
5.1.1.5.1.3	Q220.1	[....mm] thick granular material with a CBR value of not less than 30%, complying with grading limit of the Specification.	m ²			
5.1.1.5.2	Q300	<u>Roadbase</u>				
5.1.1.5.2.1	Q330.1	[....mm] thick crushed aggregates with a CBR value of not less than 80%, complying with the Specification.	m ²			
5.1.1.5.2.2	Q390.1	[....mm] thick Wet Mix Roadbase with a CBR value of not less than 80% complying with the Specification.	m ²			
5.1.1.5.2.3	Q390.2	[....mm] thick Bituminous Roadbase (AC28) complying with the Specification.	m ²			
5.1.1.5.2.4	Q390.3	[....mm] thick cement-treated Roadbase complying with Specification.	m ²			
5.1.1.5.3	Q500	<u>Surfacing</u>				
5.1.1.5.3.1	Q540	Bituminous prime coat to be applied at a rate of 0.5 - 1.0 litre per square metre as per Specification.	m ²			
5.1.1.5.3.2	Q530.1	Bituminous tack coat to be applied at a rate of 0.25 - 0.55 litre per square metre as per Specification.	m ²			
5.1.1.5.3.3	Q530.2	Bituminous tack coat to be applied for porous asphalt at a rate of 0.5 - 1.0 litre per square metre as per Specification [RS-3K / Modified bitumen emulsion or equivalent]**.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1.1.5.3.4		<u>Asphaltic Concrete</u>				
5.1.1.5.3.4 (a)	Q561	[...mm] thick binder course (AC28), as per Specification.	m ²			
5.1.1.5.3.4 (b)	Q562.1	[...mm] thick wearing course (AC10), as per Specification.	m ²			
5.1.1.5.3.4 (c)	Q562.2	[...mm] thick wearing course (AC14), as per Specification.	m ²			
5.1.1.5.3.5		<u>Porous Asphalt</u>				
5.1.1.5.3.5 (a)	Q550.1	[...mm] thick Porous Asphalt (Grading A), as per Specification.	m ²			
5.1.1.5.3.5 (b)	Q550.2	[...mm] thick Porous Asphalt (Grading B), as per Specification.	m ²			
5.1.1.5.3.6		<u>Stone Mastic Asphalt</u>				
5.1.1.5.3.6 (a)	Q550.3	[...mm] thick Stone Mastic Asphalt (SMA14), as per Specification.	m ²			
5.1.1.5.3.6 (b)	Q550.4	[...mm] thick Stone Mastic Asphalt (SMA20), as per Specification.	m ²			
5.1.1.5.3.7		<u>Gap Graded Asphalt</u>				
5.1.1.5.3.7 (a)	Q550.5	[...mm] thick Gap Graded Asphalt (GPA I), as per Specification.	m ²			
5.1.1.5.3.7 (b)	Q550.6	[...mm] thick Gap Graded Asphalt (GPA II), as per Specification.	m ²			
5.1.1.5.3.8		<u>Polymer Modified Asphalt</u>				
5.1.1.5.3.8 (a)	Q550.7	[...mm] thick Polymer Modified Asphalt (AC28), as per Specification.	m ²			
5.1.1.5.3.8 (b)	Q550.8	[...mm] thick Polymer Modified Asphalt (AC10), as per Specification.	m ²			
5.1.1.5.3.8 (c)	Q550.9	[...mm] thick Polymer Modified Asphalt (AC14), as per Specification.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1.1.6		<u>Fill Material on Unpaved Shoulder</u> The following items for filling shall include compaction, and additional filling necessitated by settlement or penetration into underlying material as applicable.				
5.1.1.6.1	F311	Using suitable excavated material as per Specification.	m ³			
5.1.1.6.2	F312.1	Imported material from Contactor's own source as per Specification.	m ³			
5.1.1.6.3	F312.2	Imported material from borrow pit as shown in the drawing as per Specification.	m ³			
5.1.1.6.4	F312.3	Imported granular material from Contractor's own source as per Drawings.	m ³			
5.1.1.6.5	F312.4	Imported sand from Contractor's own source as per Drawings.	m ³			
5.1.1.7		<u>Fill Material on Unpaved Median And Island</u> The following items for filling shall include compaction, and additional filling necessitated by settlement or penetration into underlying material as applicable.				
5.1.1.7.1	F311	Using suitable excavated material as per Specification.	m ³			
5.1.1.7.2	F312.1	Imported material from Contactor's own source as per Specification.	m ³			
5.1.1.7.3	F312.2	Imported material from borrow pit as shown in the drawing as per Specification.	m ³			
5.1.1.7.4	F312.3	Imported granular material from Contractor's own source as per Drawings.	m ³			
5.1.1.7.5	F312.4	Imported sand from Contractor's own source as per Drawings.	m ³			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1.2		<u>TREATMENT TO EXISTING PAVEMENT</u>				
5.1.2.1		<u>Crack Sealing</u>				
5.1.2.1.1	Q900.1	Prepare and clean of existing pavement surface works including blow-off dirt, loose material to receive crack sealant.	m ²			
5.1.2.1.2	Q900.2	Supply, apply evenly crack sealant on prepared existing pavement surface.	m ²			
5.1.2.2		<u>Patching</u>				
5.1.2.2.1	Q510.1	Mark, cut, break up existing pavement and cart away to designated spoil dumping ground, clearing of debris, patch and compact with asphaltic wearing course [AC....] including tack coat application.	m ³			
5.1.2.2.2	Q540	Bituminous prime coat to be applied at a rate of 0.5 - 1.0 litre per square metre as per Specification.	m ²			
5.1.2.2.3	Q530	Bituminous tack coat to be applied at a rate of 0.25 - 0.55 litre per square metre as per Specification.	m ²			
5.1.2.2.4	Q561	[...mm] thick binder course (AC28), as per Specification.	m ²			
5.1.2.2.5	Q562.1	[...mm] thick wearing course (AC10), as per Specification.	m ²			
5.1.2.2.6	Q562.2	[...mm] thick wearing course (AC14), as per Specification.	m ²			
5.1.2.3		<u>Milling and Paving</u>				
5.1.2.3.1	Q510.1	Mark, cut, break up existing pavement and cart away to designated spoil dumping ground, clearing of debris, patch and compact with asphaltic wearing course [AC....] including tack coat application.	m ³			
5.1.2.3.2		<u>Temporary Road Markings</u>				
5.1.2.3.2.1	C243	[...mm] wide intermittent line with [...mm] line and [...mm] gap.	m			
5.1.2.3.3		<u>Asphaltic Concrete</u>				
5.1.2.3.3.1	Q561	[...mm] thick binder course (AC28), as per Specification.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1.2.3.3.2	Q562.1	[...mm] thick wearing course (AC10), as per Specification.	m ²			
5.1.2.3.3.3	Q562.2	[...mm] thick wearing course (AC14), as per Specification.	m ²			
5.1.2.3.4		<u>Porous Asphalt</u>				
5.1.2.3.4.1	Q550.1	[...mm] thick Porous Asphalt (Grading A), as per Specification.	m ²			
5.1.2.3.4.2	Q550.2	[...mm] thick Porous Asphalt (Grading B), as per Specification.	m ²			
5.1.2.3.5		<u>Stone Mastic Asphalt</u>				
5.1.2.3.5.1	Q550.3	[...mm] thick Stone Mastic Asphalt (SMA14), as per Specification.	m ²			
5.1.2.3.5.2	Q550.4	[...mm] thick Stone Mastic Asphalt (SMA20), as per Specification.	m ²			
5.1.2.3.6		<u>Gap Graded Asphalt</u>				
5.1.2.3.6.1	Q550.5	[...mm] thick Gap Graded Asphalt (GPA I), as per Specification.	m ²			
5.1.2.3.6.2	Q550.6	[...mm] thick Gap Graded Asphalt (GPA II), as per Specification.	m ²			
5.1.2.3.7		<u>Polymer Modified Asphalt</u>				
5.1.2.3.7.1	Q550.7	[...mm] thick Polymer Modified Binder course (AC28), as per Specification.	m ²			
5.1.2.3.7.2	Q550.8	[...mm] thick Polymer Modified Asphalt (AC10), as per Specification.	m ²			
5.1.2.3.7.3	Q550.9	[...mm] thick Polymer Modified Asphalt (AC14), as per Specification.	m ²			
5.1.2.4		<u>Regulation</u>				
5.1.2.4.1	Q530	Bituminous tack coat to be applied at a rate of 0.25 - 0.55 litre per square metre as per Specification.	m ²			
5.1.2.4.2	Q580	[AC.....] to the required formation level.	t			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1.2.5		<u>Reconstruction of Existing Pavement</u>				
5.1.2.5.1	Q110	Earth material to receive road pavement. Rate to include scarifying, levelling, and compaction of the top 300 mm of the subgrade.	m ²			
5.1.2.5.2	Q200	<u>Sub-base</u>				
5.1.2.5.2.1	Q210.1	Geotextile of the woven type as per Specification.	m ²			
5.1.2.5.2.2	Q210.2	Geotextile of the non-woven type as per Specification.	m ²			
5.1.2.5.2.3	Q220.1	[...mm] thick granular material with a CBR value of not less than 30%, complying with grading limits of the Specification.	m ²			
5.1.2.5.3	Q300	<u>Roadbase</u>				
5.1.2.5.3.1	Q330.1	[...mm] thick crushed aggregates with a CBR value of more than 80%, complying with the Specification.	m ²			
5.1.2.5.3.2	Q390.1	[...mm] thick Wet Mix Roadbase with a CBR value of more than 80% complying with the Specification.	m ²			
5.1.2.5.3.3	Q390.2	[...mm] thick Bituminous Roadbase (AC28) complying with the Specification.	m ²			
5.1.2.5.3.4	Q390.3	[...mm] thick cement-treated Roadbase complying with the Specification.	m ²			
5.1.2.5.4	Q500	<u>Surfacing</u>				
5.1.2.5.4.1	Q540	Bituminous prime coat to be applied at a rate of 0.5 - 1.0 litre per square metre as per Specification.	m ²			
5.1.2.5.4.2	Q530.1	Bituminous tack coat to be applied at a rate of 0.25 - 0.55 litre per square metre as per Specification.	m ²			
5.1.2.5.4.3	Q530.2	Bituminous tack coat to be applied for porous asphalt at a rate of 0.5 - 1.0 litre per square metre as per Specification [RS-3K / Modified bitumen emulsion or equivalent]**.	m ²			
5.1.2.5.4.4		<u>Asphaltic Concrete</u>				
5.1.2.5.4.4 (a)	Q561	[...mm] thick Binder Course (AC28), as per Specification.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1.2.5.4.4 (b)	Q562.1	[...mm] thick Wearing Course (AC10), as per Specification.	m ²			
5.1.2.5.4.4 (c)	Q562.2	[...mm] thick Wearing Course (AC14), as per Specification.	m ²			
5.1.2.5.4.5		<u>Porous Asphalt</u>				
5.1.2.5.4.5 (a)	Q550.1	[...mm] thick Porous Asphalt (Grading A), as per Specification.	m ²			
5.1.2.5.4.5 (b)	Q550.2	[...mm] thick Porous Asphalt (Grading B), as per Specification.	m ²			
5.1.2.5.4.6		<u>Stone Mastic Asphalt</u>				
5.1.2.5.4.6 (a)	Q550.3	[...mm] thick Stone Mastic Asphalt (SMA14), as per Specification.	m ²			
5.1.2.5.4.6 (b)	Q550.4	[...mm] thick Stone Mastic Asphalt (SMA20), as per Specification.	m ²			
5.1.2.5.4.7		<u>Gap Graded Asphalt</u>				
5.1.2.5.4.7 (a)	Q550.5	[...mm] thick Gap Graded Asphalt (GPA I), as per Specification.	m ²			
5.1.2.5.4.7 (b)	Q550.6	[...mm] thick Gap Graded Asphalt (GPA II), as per Specification.	m ²			
5.1.2.5.4.8		<u>Polymer Modified Asphalt</u>				
5.1.2.5.4.8 (a)	Q550.7	[...mm] thick Polymer Modified Asphalt (AC28), as per Specification.	m ²			
5.1.2.5.4.8 (b)	Q550.8	[...mm] thick Polymer Modified Asphalt (AC10), as per Specification.	m ²			
5.1.2.5.4.8 (c)	Q550.9	[...mm] thick Polymer Modified Asphalt (AC14), as per Specification.	m ²			
5.1.2.6		<u>Overlay</u>				
5.1.2.6.1	Q540	Bituminous prime coat to be applied at a rate of 0.5 - 1.0 litre per square metre as per Specification.	m ²			
5.1.2.6.2	Q530	Bituminous tack coat to be applied at a rate of 0.25 - 0.55 litre per square metre as per Specification.	m ²			
5.1.2.6.3	Q530.2	Bituminous tack coat to be applied for porous asphalt at a rate of 0.5 - 1.0 litre per square metre as per Specification [RS-3K / Modified bitumen emulsion or equivalent]**.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1.2.6.4		<u>Asphaltic Concrete</u>				
5.1.2.6.4.1	Q561	[...mm] thick binder course (AC28), as per Specification.	m ²			
5.1.2.6.4.2	Q562.1	[...mm] thick wearing course (AC10), as per Specification.	m ²			
5.1.2.6.4.3	Q562.2	[...mm] thick wearing course (AC14), as per Specification.	m ²			
5.1.2.6.5		<u>Porous Asphalt</u>				
5.1.2.6.5.1	Q550.1	[...mm] thick Porous Asphalt (Grading A), as per Specification.	m ²			
5.1.2.6.5.2	Q550.2	[...mm] thick Porous Asphalt (Grading B), as per Specification.	m ²			
5.1.2.6.6		<u>Stone Mastic Asphalt</u>				
5.1.2.6.6.1	Q550.3	[...mm] thick Stone Mastic Asphalt (SMA14), as per Specification.	m ²			
5.1.2.6.6.2	Q550.4	[...mm] thick Stone Mastic Asphalt (SMA20), as per Specification.	m ²			
5.1.2.6.7		<u>Gap Graded Asphalt</u>				
5.1.2.6.7.1	Q550.5	[...mm] thick Gap Graded Asphalt (GPA I), as per Specification.	m ²			
5.1.2.6.7.2	Q550.6	[...mm] thick Gap Graded Asphalt (GPA II), as per Specification.	m ²			
5.1.2.6.8		<u>Polymer Modified Asphalt</u>				
5.1.2.6.8.1	Q550.7	[...mm] thick Polymer Modified Asphalt (AC28), as per Specification.	m ²			
5.1.2.6.8.2	Q550.8	[...mm] thick Polymer Modified Asphalt(AC10), as per Specification.	m ²			
5.1.2.6.8.3	Q550.9	[...mm] thick Polymer Modified Asphalt (AC14), as per Specification.	m ²			
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BILL NO. 5 - PAVEMENT WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.1.2.7		<u>Cold-in-Place Recycling (CIPR)</u>				
5.1.2.7.1	Q349.1	Cold-in-Place Recycling (CIPR) to a depth of (.....) mm with the addition of (.....%) cement.	m ²			
5.1.2.7.2	Q349.2	Cold-in-Place Recycling (CIPR) to a depth of (.....) mm with the addition of (.....%) foamed bitumen.	m ²			
5.1.2.7.3	Q349.3	Cold-in-Place Recycling (CIPR) to a depth of (.....) mm with the addition of (.....%) bituminous emulsion or equivalent.	m ²			
5.1.2.8		<u>Hot-in-Place Recycling (HIPR)</u>				
5.1.2.8.1	Q590.1	Hot-In-Place Recycling (HIPR) to (.....) mm depth.	m ²			
5.1.2.8.2		Additional asphalt materials [.....] where required.	t			
5.2		<u>CONCRETE PAVEMENT</u>				
5.2.1		<u>NEW PAVEMENT</u>				
5.2.1.1	Q100	<u>Subgrade Preparation</u>				
5.2.1.1.1	Q110	Earth material to receive road pavement. Rate to include scarifying, levelling, and compaction of the top 300 mm of the subgrade.	m ²			
5.2.1.1.2	Q141	Stabilise [...mm] thick subgrade using minimum [...kg] of lime per cubic metre of soil, up to formation level.	m ²			
5.2.1.1.3	Q142	Stabilise [...mm] thick subgrade using minimum [...kg] of cement per cubic metre of soil, up to formation level.	m ²			
5.2.1.1.4	Q149.1	Stabilise [...mm] thick subgrade using minimum [...kg] of granular material per cubic metre of soil, up to formation level.	m ²			
5.2.1.1.5	Q149.2	Stabilise [...mm] thick subgrade using minimum [...kg] of bituminous material per cubic metre of soil, up to formation level.	m ²			
5.2.1.1.6	Q149.3	Stabilise [...mm] thick subgrade using minimum [...kg] of cement and lime per cubic metre of soil, up to formation level.	m ²			
5.2.1.1.7	Q149.4	Stabilise [...mm] thick subgrade using minimum [...kg] of [.....] per cubic metre of soil, up to formation level.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.2.1.2		<u>Carriageway and Paved Shoulder</u>				
5.2.1.2.1	Q200	<u>Sub-base</u>				
5.2.1.2.1.1	Q220.1	[.....mm] thick granular material with a CBR value of not less than 30%, complying with grading limits the Specification.	m ²			
5.2.1.2.2	I100.0	<u>In Situ Concrete Design Mix</u>				
		Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
5.2.1.2.2.1	I121	<u>Grade C..... Concrete</u> Mass concrete blinding, [...mm] thick [to carriageway and paved shoulder].	m ²			
5.2.1.2.3	I900	Wax based emulsion curing compound using mechanical spraybar.	m ²			
5.2.1.2.4	Q612	Bond breaker as per Specification clause (....) below concrete pavement.	m ²			
5.2.1.2.5	Q630	Carriageway slab in [Grade C....., .....mm] thick. Rate to include [steel formwork].	m ²			
5.2.1.2.6		<u>Joints in Concrete Pavement</u>				
		Joints in concrete pavements shall be deemed to include base preparation, joints, and cutting.				
5.2.1.2.6.1	Q651	Longitudinal joints, [...mm] deep.	m			
5.2.1.2.6.2	Q657	Transverse joints, [...mm] deep.	m			
5.2.1.2.6.3	Q652	Expansion joints, [...mm] deep.	m			
5.2.1.2.6.4	Q653	Construction joints, [...mm] deep.	m			
5.2.1.2.6.5	Q654	Warping joints, [...mm] deep.	m			
5.2.1.2.6.6	Q655	Butt joints, [...mm] deep.	m			
5.2.1.2.6.7	Q656	Special joints with [...mm nominal diameter high tensile steel bars] for transverse joints.	m			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.2.1.2.7		<u>Pavers Texturing</u> Rate for pavers shall be deemed to include base preparation, joints, and cutting.				
5.2.1.2.7.1	Q663.1	In situ concrete pavers, [concrete imprint, ....mm thick].	m ²			
5.2.1.2.7.2	Q663.2	Curing compound/sealer coat on finished concrete slab.	m ²			
5.2.1.2.7.3	Q663.3	To provide movable shaded cover for protection of plain concrete pavement and lean concrete subbase from rain during paving.	m ²			
5.2.1.2.7.4	Q663.4	To provide labour and necessary equipment to stamp concrete slab surface with letterings as shown in the Drawings.	nr			
5.2.1.2.8		<u>Concrete Ancillaries - Joints</u> Rate for joints shall be deemed to include formwork.				
5.2.1.2.8.1	I615.3	Sealed [20 mm x 20 mm] grooves with silicone sealant to form contraction joint.	m			
5.2.1.2.9		<u>Reinforcement</u> Rate for reinforcement shall be deemed to include labour for cutting, bending, and placing.				
5.2.1.2.9.1	Q621.1	Mild steel bar reinforcement to nominal diameter [....mm].	t			
5.2.1.2.9.2	Q621.2	Mild steel bar reinforcement to nominal diameter [....mm].	t			
5.2.1.2.9.3	Q622.1	High tensile steel bar reinforcement to nominal diameter of [....mm].	t			
5.2.1.2.10		<u>Anchor Beam</u> Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
5.2.1.2.10.1	I134	<u>Grade C25 Concrete</u> Reinforced concrete beam (.....mm xmm) as shown in the Drawings.	m ³			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.2.1.2.10.2	I144	Grade C30 Concrete Reinforced concrete beam (.....mm xmm) as shown in the Drawings.	m ³			
5.2.1.2.10.3	I154	Grade C35 Concrete Reinforced concrete beam (.....mm x .....mm) as shown in the Drawings.	m ³			
5.2.1.2.10.4	I174	Grade C40 Concrete Reinforced concrete beam (.....mm x .....mm) as shown in the Drawings.	m ³			
		Reinforcement Rate for reinforcement shall be deemed to include labour for cutting, bending, and placing.				
5.2.1.2.10.5	Q621.1	Mild steel bar reinforcement to nominal diameter [....mm].	t			
5.2.1.2.10.6	Q622.1	High tensile steel bar reinforcement to nominal diameter of [....mm].	t			
5.2.1.2.10.7	I413	Formwork for anchor Beam. F1: rough finish to beams.	m ²			
5.2.1.3		Fill Material On Unpaved Shoulder The following items for filling shall include compaction, and additional filling necessitated by settlement or penetration into underlying material as applicable.				
5.2.1.3.1	F311	Using suitable excavated material as per Specification.	m ³			
5.2.1.3.2	F312.1	Imported material from Contactor's own source as per Specification.	m ³			
5.2.1.3.3	F312.2	Imported material from borrow pit as shown in the drawing as per Specification.	m ³			
5.2.1.3.4	F312.3	Imported granular material from Contractor's own source as per Drawings.	m ³			
5.2.1.3.5	F312.4	Imported sand from Contractor's own source as per Drawings.	m ³			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.2.1.4		<u>Filter Material</u>				
5.2.1.4.1	F314.1	Other stated material – granular material as per Specification.	m ³			
5.2.1.4.2	F410	[Continuous polypropylene filament, nonwoven] geotextile with tensile strength of 19 kN/m, effective opening size of 0.09 mm and nominal mass of 250 g/m2 as per Specification	m ²			
5.3		<u>INTERLOCKING CONCRETE BLOCK</u>				
5.3.1	Q100	<u>Subgrade Preparation</u>				
5.3.1.1	Q110	Earth material to receive road pavement. Rate to include scarifying, levelling, and compaction of the top 300 mm of the subgrade.	m ²			
5.3.1.2	Q141	Stabilise [...mm] thick subgrade using minimum [...kg] of lime per cubic metre of soil, up to formation level.	m ²			
5.3.1.3	Q142	Stabilise [...mm] thick subgrade using minimum [...kg] of cement per cubic metre of soil, up to formation level.	m ²			
5.3.1.4	Q149.1	Stabilise [...mm] thick subgrade using minimum [...kg] of granular material per cubic metre of soil, up to formation level.	m ²			
5.3.1.5	Q149.2	Stabilise [...mm] thick subgrade using minimum [...kg] of bituminous material per cubic metre of soil, up to formation level.	m ²			
5.3.1.6	Q149.3	Stabilise [...mm] thick subgrade using minimum [...kg] of cement and lime per cubic metre of soil, up to formation level.	m ²			
5.3.1.7	Q149.4	Stabilise [...mm] thick subgrade using minimum [...kg] of [.....] per cubic metre of soil, up to formation level.	m ²			
5.3.2	Q200	<u>Sub-Base</u>				
5.3.2.1	Q210.1	Geotextile of the woven type as per Specification.	m ²			
5.3.2.2	Q210.2	Geotextile of the non-woven type as per Specification.	m ²			
5.3.2.3	Q220.1	[.....mm] thick granular material with a CBR value of not less than 30%, complying with grading limits of the Specification.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
5.3.3		<u>Interlocking Concrete Block</u> Rate for interlocking concrete block shall be deemed to include supply, install, base preparation, joints, and cutting.				
5.3.3.1	Q661	[Precast] interlocking concrete block of [.....mm xmm xmm thick].	m ²			
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PROJECT :

BILL NO. 6 - ROAD FURNITURE

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.1	Q810	<u>SIGNBOARDS</u>				
6.1.1		<u>Destination Signage</u>				
		Traffic signs shall generally be in accordance with the latest version of Arahan Teknik (Jalan) 2E/87. Post mounted signages shall be deemed to include foundations, support posts, purlins frame and connections, excavation, preparation of surfaces, disposal of excavated material, upholding sides of excavation, backfilling, concrete, reinforcement, and joints.				
6.1.1.1	Q811.1	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate not exceeding 1.0m ² .	nr			
6.1.1.2	Q811.2	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate exceeding 1.0 - not exceeding 2.0m ² .	nr			
6.1.1.3	Q811.3	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate exceeding 2.0 - not exceeding 3.0m ² .	nr			
6.1.1.4	Q811.4	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate exceeding 3.0 - not exceeding 4.0m ² .	nr			
6.1.1.5	Q811.5	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate exceeding 4.0m ² .	nr			
6.1.1.6	Q811.6	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate not exceeding 1.0m ² .	nr			
6.1.1.7	Q811.7	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate exceeding 1.0 - not exceeding 2.0m ² .	nr			
6.1.1.8	Q811.8	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate exceeding 2.0 - not exceeding 3.0m ² .	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.1.1.9	Q811.9	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate exceeding 3.0 - not exceeding 4.0m ² .	nr			
6.1.1.10	Q811.10	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate exceeding 4.0m ² .	nr			
6.1.2		<u>Gantry Directional Signage</u>				
6.1.2.1	Q811.11	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate not exceeding 10.0m ² on gantry.	nr			
6.1.2.2	Q811.12	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate exceeding 10.0m ² on gantry.	nr			
6.1.2.3	Q811.13	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate not exceeding 10.0m ² on gantry.	nr			
6.1.2.4	Q811.14	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate exceeding 10.0m ² on gantry.	nr			
6.1.2.5	Q812.1	Illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate not exceeding 10.0m ² on gantry.	nr			
6.1.2.6	Q812.2	Illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate exceeding 10.0m ² on gantry.	nr			
6.1.2.7	Q812.3	Illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate not exceeding 10.0m ² on gantry.	nr			
6.1.2.8	Q812.4	Illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate more than 10.0m ² on gantry.	nr			
6.1.3		<u>Butterfly Gantry Directional Signage</u>				
6.1.3.1	Q811.15	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate not exceeding 10.0m ² on butterfly gantry.	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.1.3.2	Q811.16	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate exceeding 10.0m ² on butterfly gantry.	nr			
6.1.3.3	Q811.17	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate not exceeding 10.0m ² on butterfly gantry.	nr			
6.1.3.4	Q811.18	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate exceeding 10.0m ² on butterfly gantry.	nr			
6.1.4		<u>Gantry Type</u> Fabrication, deliver to site and installation gantry inclusive of foundation, post, purlin frames and connection as specified and shown in drawing.				
6.1.4.1	Q860.1	[Carbon steel overhead] gantry of Type 1 not exceeding 13m span.	nr			
6.1.4.2	Q860.2	[Carbon steel overhead] gantry of Type 1 more than 13m span.	nr			
6.1.4.3	Q860.3	[Carbon steel overhead] gantry of Type 2 not exceeding 13m span.	nr			
6.1.4.4	Q860.4	[Carbon steel overhead] gantry of Type 2 more than 13m span.	nr			
6.1.4.5	Q860.5	[Carbon steel overhead] butterfly gantry of [...m wide and 6 m high].	nr			
6.1.5		<u>Warning and Regulatory Traffic Signs</u> Traffic signs shall generally be in accordance with the latest version of Arahan Teknik (Jalan) 2E/87. Post mounted signages shall be deemed to include foundations, support posts, purlins frame and connections, excavation, preparation of surfaces, disposal of excavated material, upholding sides of excavation, backfilling, concrete, reinforcement, and joints.				
6.1.5.1	Q811.19	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 1 sign [sizemm xmm].	nr			
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6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.2	Q811.20	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 2a sign [sizemm xmm].	nr			
6.1.5.3	Q811.21	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 2b sign [size .....mm x .....mm].	nr			
6.1.5.4	Q811.22	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 3 sign [size .....mm x .....mm].	nr			
6.1.5.5	Q811.23	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 4 sign [size .....mm x .....mm].	nr			
6.1.5.6	Q811.24	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 5 sign [size .....mm x .....mm].	nr			
6.1.5.7	Q811.25	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 6 sign [size .....mm x .....mm].	nr			
6.1.5.8	Q811.26	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 7 sign [size .....mm x .....mm].	nr			
6.1.5.9	Q811.27	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 8a sign [size .....mm x .....mm].	nr			
6.1.5.10	Q811.28	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 8b sign [size .....mm x .....mm].	nr			
6.1.5.11	Q811.29	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 9 sign [size .....mm x .....mm].	nr			
6.1.5.12	Q811.30	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 10 sign [size .....mm x .....mm].	nr			
6.1.5.13	Q811.31	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 11 sign [sizemm xmm].	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.14	Q811.32	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 12 sign [size .....mm x .....mm].	nr			
6.1.5.15	Q811.33	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 13 sign [size .....mm x .....mm].	nr			
6.1.5.16	Q811.34	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 14 sign [size .....mm x .....mm].	nr			
6.1.5.17	Q811.35	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 15 sign [size .....mm x .....mm].	nr			
6.1.5.18	Q811.36	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 17 sign [size .....mm x .....mm].	nr			
6.1.5.19	Q811.37	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RM 1a sign [size .....mm x .....mm].	nr			
6.1.5.20	Q811.38	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RM 1b sign [size .....mm x .....mm].	nr			
6.1.5.21	Q811.39	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RM 1c sign [size .....mm x .....mm].	nr			
6.1.5.22	Q811.40	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RM 1d sign [size .....mm x .....mm].	nr			
6.1.5.23	Q811.41	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RM 2a sign [size .....mm x .....mm].	nr			
6.1.5.24	Q811.42	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RM 2c sign [size .....mm x .....mm].	nr			
6.1.5.25	Q811.43	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RM 4 sign [sizemm xmm].	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.26	Q811.44	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 1 sign [size .....mm x .....mm].	nr			
6.1.5.27	Q811.45	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 2 sign [size .....mm x .....mm].	nr			
6.1.5.28	Q811.46	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 3 sign [size .....mm x .....mm].	nr			
6.1.5.29	Q811.47	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 4 sign [size .....mm x .....mm].	nr			
6.1.5.30	Q811.48	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 5 sign [size .....mm x .....mm].	nr			
6.1.5.31	Q811.49	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 6&7 sign [size .....mm x .....mm].	nr			
6.1.5.32	Q811.50	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 8 sign [size .....mm x .....mm].	nr			
6.1.5.33	Q811.51	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 9 sign [size .....mm x .....mm].	nr			
6.1.5.34	Q811.52	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 10a sign [size .....mm x .....mm].	nr			
6.1.5.35	Q811.53	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 10b sign [size .....mm x .....mm].	nr			
6.1.5.36	Q811.54	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 11 sign [size .....mm x .....mm].	nr			
6.1.5.37	Q811.55	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 12 sign [sizemm xmm].	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.38	Q811.56	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 13 sign [size .....mm x .....mm].	nr			
6.1.5.39	Q811.57	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 14 sign [size .....mm x .....mm].	nr			
6.1.5.40	Q811.58	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 15 sign [size .....mm x .....mm].	nr			
6.1.5.41	Q811.59	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 16 sign [size .....mm x .....mm].	nr			
6.1.5.42	Q811.60	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 17 sign [size .....mm x .....mm].	nr			
6.1.5.43	Q811.61	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 18 sign [size .....mm x .....mm].	nr			
6.1.5.44	Q811.62	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 19 sign [size .....mm x .....mm].	nr			
6.1.5.45	Q811.63	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 20 sign [size .....mm x .....mm].	nr			
6.1.5.46	Q811.64	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 21 sign [size .....mm x .....mm].	nr			
6.1.5.47	Q811.65	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 22 sign [size .....mm x .....mm].	nr			
6.1.5.48	Q811.66	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 23 sign [size .....mm x .....mm].	nr			
6.1.5.49	Q811.67	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 24 sign [sizemm xmm].	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.50	Q811.68	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 25 sign [size .....mm x .....mm].	nr			
6.1.5.51	Q811.69	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 26 sign [size .....mm x .....mm].	nr			
6.1.5.52	Q811.70	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 27a sign [size .....mm x .....mm].	nr			
6.1.5.53	Q811.71	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 27b sign [size .....mm x .....mm].	nr			
6.1.5.54	Q811.72	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 27c sign [size .....mm x .....mm].	nr			
6.1.5.55	Q811.73	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 27d sign [size .....mm x .....mm].	nr			
6.1.5.56	Q811.74	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 27e sign [size .....mm x .....mm].	nr			
6.1.5.57	Q811.75	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 28a sign [size .....mm x .....mm].	nr			
6.1.5.58	Q811.76	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 28b sign [size .....mm x .....mm].	nr			
6.1.5.59	Q811.77	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 29 sign [size .....mm x .....mm].	nr			
6.1.5.60	Q811.78	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 30 sign [size .....mm x .....mm].	nr			
6.1.5.61	Q811.79	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 31 sign [sizemm xmm].	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.62	Q811.80	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 32a sign [size .....mm x .....mm].	nr			
6.1.5.63	Q811.81	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 32b sign [size .....mm x .....mm].	nr			
6.1.5.64	Q811.82	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 33 sign [size .....mm x .....mm].	nr			
6.1.5.65	Q811.83	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 34 sign [size .....mm x .....mm].	nr			
6.1.5.66	Q811.84	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 35 sign [size .....mm x .....mm].	nr			
6.1.5.67	Q811.85	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 36 sign [size .....mm x .....mm].	nr			
6.1.5.68	Q811.86	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 37 sign [size .....mm x .....mm].	nr			
6.1.5.69	Q811.87	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 38a sign [size .....mm x .....mm].	nr			
6.1.5.70	Q811.88	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 38b sign [size .....mm x .....mm].	nr			
6.1.5.71	Q811.89	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 39a sign [size .....mm x .....mm].	nr			
6.1.5.72	Q811.90	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 39b sign [size .....mm x .....mm].	nr			
6.1.5.73	Q811.91	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 40 sign [sizemm xmm].	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.74	Q811.92	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 41 sign [size .....mm x .....mm].	nr			
6.1.5.75	Q811.93	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 42 sign [size .....mm x .....mm].	nr			
6.1.5.76	Q811.94	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 45 sign [size .....mm x .....mm].	nr			
6.1.5.77	Q811.95	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 49 sign [size .....mm x .....mm].	nr			
6.1.5.78	Q811.96	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 51 sign [size .....mm x .....mm].	nr			
6.1.5.79	Q811.97	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 52 sign [size .....mm x .....mm].	nr			
6.1.5.80	Q811.98	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type GI 1 sign [size .....mm x .....mm].	nr			
6.1.5.81	Q811.99	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type GI 3 sign [size .....mm x .....mm].	nr			
6.1.5.82	Q811.100	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type GI 4 sign [size .....mm x .....mm].	nr			
6.1.5.83	Q811.101	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type GI 5 sign [size .....mm x .....mm].	nr			
6.1.5.84	Q811.102	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type GI 6 sign [size .....mm x .....mm].	nr			
6.1.5.85	Q811.103	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type GI 7 sign [sizemm xmm].	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.86	Q811.104	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type GI 8 sign [size .....mm x .....mm].	nr			
6.1.5.87	Q811.105	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type GI 9 sign [size .....mm x .....mm].	nr			
6.1.5.88	Q811.106	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 1 sign [size .....mm x .....mm].	nr			
6.1.5.89	Q811.107	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 2a sign [size .....mm x .....mm].	nr			
6.1.5.90	Q811.108	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 2b sign [size .....mm x .....mm].	nr			
6.1.5.91	Q811.109	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 3 sign [size .....mm x .....mm].	nr			
6.1.5.92	Q811.110	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 4 sign [size .....mm x .....mm].	nr			
6.1.5.93	Q811.111	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 5 sign [size .....mm x .....mm].	nr			
6.1.5.94	Q811.112	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 6 sign [size .....mm x .....mm].	nr			
6.1.5.95	Q811.113	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 7 sign [sizemm xmm].	nr			
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6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.96	Q811.114	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 8a sign [sizemm xmm].	nr			
6.1.5.97	Q811.115	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 8b sign [size .....mm x .....mm].	nr			
6.1.5.98	Q811.116	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type RP 9 sign [size .....mm x .....mm].	nr			
6.1.5.99	Q811.117	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 10 sign [size .....mm x .....mm].	nr			
6.1.5.100	Q811.118	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 11 sign [size .....mm x .....mm].	nr			
6.1.5.101	Q811.119	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 12 sign [size .....mm x .....mm].	nr			
6.1.5.102	Q811.120	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 13 sign [size .....mm x .....mm].	nr			
6.1.5.103	Q811.121	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 14 sign [size .....mm x .....mm].	nr			
6.1.5.104	Q811.122	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 15 sign [size .....mm x .....mm].	nr			
6.1.5.105	Q811.123	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RP 17 sign [sizemm xmm].	nr			
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6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.106	Q811.124	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RM 1a sign [sizemm xmm].	nr			
6.1.5.107	Q811.125	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RM 1b sign [size .....mm x .....mm].	nr			
6.1.5.108	Q811.126	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RM 1c sign [size .....mm x .....mm].	nr			
6.1.5.109	Q811.127	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RM 1d sign [size .....mm x .....mm].	nr			
6.1.5.110	Q811.128	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RM 2a sign [size .....mm x .....mm].	nr			
6.1.5.111	Q811.129	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RM 2c sign [size .....mm x .....mm].	nr			
6.1.5.112	Q811.130	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type RM 4 sign [size .....mm x .....mm].	nr			
6.1.5.113	Q811.131	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 1 sign [size .....mm x .....mm].	nr			
6.1.5.114	Q811.132	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 2 sign [size .....mm x .....mm].	nr			
6.1.5.115	Q811.133	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 3 sign [sizemm xmm].	nr			
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6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.116	Q811.134	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 4 sign [sizemm xmm].	nr			
6.1.5.117	Q811.135	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 5 sign [size .....mm x .....mm].	nr			
6.1.5.118	Q811.136	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 6&7 sign [size .....mm x .....mm].	nr			
6.1.5.119	Q811.137	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 8 sign [size .....mm x .....mm].	nr			
6.1.5.120	Q811.138	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 9 sign [size .....mm x .....mm].	nr			
6.1.5.121	Q811.139	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 10a sign [size .....mm x .....mm].	nr			
6.1.5.122	Q811.140	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 10b sign [size .....mm x .....mm].	nr			
6.1.5.123	Q811.141	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 11 sign [size .....mm x .....mm].	nr			
6.1.5.124	Q811.142	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 12 sign [size .....mm x .....mm].	nr			
6.1.5.125	Q811.143	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 13 sign [sizemm xmm].	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.126	Q811.144	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium alloy sign plate for type WD 14 sign [size .....mm x .....mm].	nr			
6.1.5.127	Q811.145	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 15 sign [size .....mm x .....mm].	nr			
6.1.5.128	Q811.146	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 16 sign [size .....mm x .....mm].	nr			
6.1.5.129	Q811.147	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 17 sign [size .....mm x .....mm].	nr			
6.1.5.130	Q811.148	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 18 sign [size .....mm x .....mm].	nr			
6.1.5.131	Q811.149	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 19 sign [size .....mm x .....mm].	nr			
6.1.5.132	Q811.150	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 20 sign [size .....mm x .....mm].	nr			
6.1.5.133	Q811.151	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 21 sign [size .....mm x .....mm].	nr			
6.1.5.134	Q811.152	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 22 sign [size .....mm x .....mm].	nr			
6.1.5.135	Q811.153	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 23 sign [sizemm xmm].	nr			
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6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.136	Q811.154	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 24 sign [sizemm xmm].	nr			
6.1.5.137	Q811.155	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 25 sign [size .....mm x .....mm].	nr			
6.1.5.138	Q811.156	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 26 sign [size .....mm x .....mm].	nr			
6.1.5.139	Q811.157	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 27a sign [size .....mm x .....mm].	nr			
6.1.5.140	Q811.158	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 27b sign [size .....mm x .....mm].	nr			
6.1.5.141	Q811.159	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 27c sign [size .....mm x .....mm].	nr			
6.1.5.142	Q811.160	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 27d sign [size .....mm x .....mm].	nr			
6.1.5.143	Q811.161	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 27e sign [size .....mm x .....mm].	nr			
6.1.5.144	Q811.162	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 28a sign [size .....mm x .....mm].	nr			
6.1.5.145	Q811.163	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 28b sign [sizemm xmm].	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.146	Q811.164	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 29 sign [size .....mm x .....mm].	nr			
6.1.5.147	Q811.165	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 30 sign [size .....mm x .....mm].	nr			
6.1.5.148	Q811.166	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 31 sign [size .....mm x .....mm].	nr			
6.1.5.149	Q811.167	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 32a sign [size .....mm x .....mm].	nr			
6.1.5.150	Q811.168	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 32b sign [size .....mm x .....mm].	nr			
6.1.5.151	Q811.169	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 33 sign [size .....mm x .....mm].	nr			
6.1.5.152	Q811.170	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 34 sign [size .....mm x .....mm].	nr			
6.1.5.153	Q811.171	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 35 sign [size .....mm x .....mm].	nr			
6.1.5.154	Q811.172	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 36 sign [size .....mm x .....mm].	nr			
6.1.5.155	Q811.173	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 37 sign [sizemm xmm].	nr			
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6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.156	Q811.174	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 38a sign [sizemm xmm].	nr			
6.1.5.157	Q811.175	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 38b sign [size .....mm x .....mm].	nr			
6.1.5.158	Q811.176	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 39a sign [size .....mm x .....mm].	nr			
6.1.5.159	Q811.177	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 39b sign [size .....mm x .....mm].	nr			
6.1.5.160	Q811.178	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 40 sign [size .....mm x .....mm].	nr			
6.1.5.161	Q811.179	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 41 sign [size .....mm x .....mm].	nr			
6.1.5.162	Q811.180	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 42 sign [size .....mm x .....mm].	nr			
6.1.5.163	Q811.181	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 45 sign [size .....mm x .....mm].	nr			
6.1.5.164	Q811.182	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 49 sign [size .....mm x .....mm].	nr			
6.1.5.165	Q811.183	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 51 sign [sizemm xmm].	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.1.5		<u>Warning and Regulatory Traffic Signs (Cont'd)</u>				
6.1.5.166	Q811.184	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type WD 52 sign [size .....mm x .....mm].	nr			
6.1.5.167	Q811.185	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type GI 1 sign [size .....mm x .....mm].	nr			
6.1.5.168	Q811.186	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type GI 3 sign [size .....mm x .....mm].	nr			
6.1.5.169	Q811.187	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type GI 4 sign [size .....mm x .....mm].	nr			
6.1.5.170	Q811.188	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type GI 5 sign [size .....mm x .....mm].	nr			
6.1.5.171	Q811.189	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type GI 6 sign [size .....mm x .....mm].	nr			
6.1.5.172	Q811.190	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type GI 7 sign [size .....mm x .....mm].	nr			
6.1.5.173	Q811.191	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type GI 8 sign [size .....mm x .....mm].	nr			
6.1.5.174	Q811.192	Non-illuminated high intensity prismatic retro-reflective sheeting mounted on aluminium composite sign plate for type GI 9 sign [sizemm xmm].	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.2		<u>TRAFFIC BARRIER</u>				
6.2.1	Q843	<u>Guardrails</u>				
6.2.1.1	Q843.1	Single mounted corrugated steel beam guardrail with post at 2 m spacing inclusive of delineators. Rate to include bolts, nuts, posts, spot welding to bolts and nuts and other ancillary work.	m			
6.2.1.2	Q843.2	Double mounted corrugated steel beam guardrail with post at 2 m spacing inclusive of delineators. Rate to include bolts, nuts, posts, spot welding to bolts and nuts and other ancillary work.	m			
6.2.1.3	Q844.1	Guardrail end Type 1. Rate to include bolts, nuts, posts, spot welding to bolts and nuts and other ancillary work.	nr			
6.2.1.4	Q844.2	Guardrail end Type 2 . Rate to include bolts, nuts, posts, spot welding to bolts and nuts and other ancillary work.	nr			
6.2.1.5	Q844.3	Guardrail end Type 3. Rate to include bolts, nuts, posts, spot welding to bolts and nuts and other ancillary work.	nr			
6.2.1.6	Q844.4	Guardrail end Type 4. Rate to include bolts, nuts, posts, spot welding to bolts and nuts and other ancillary work.	nr			
6.2.2	Q841	<u>New Jersey Barrier</u>				
6.2.2.1	Q841.1	Precast concrete New Jersey barrier as shown in Drawings.	m			
6.2.2.2	Q841.2	Cast <i>in situ</i> concrete New Jersey barrier as shown in Drawings.	m			
6.2.3	Q842	<u>Wire Rope</u>				
6.2.3.1	Q842	Wire rope as shown in Drawings. Rate to include bolts, nuts, posts, and other ancillary work.	m			
6.2.4	Q856	<u>Noise Barrier</u>				
6.2.4.1	Q856	[Material eg. Polycarbonate] noise barrier [...m] height as as shown in Drawings. Rate to include supply, fabrication, installation, bolts, nuts, posts, and other ancillary work and maintenance.	m			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.3		<u>PAVEMENT MARKINGS</u>				
6.3.1		Hot-applied reflectorised all weather thermoplastic road markings. Pavement markings shall generally be hot-applied reflectorised all weather thermoplastic and in accordance with the latest version of Standard Specification for Road Works: Section 6: Road Furniture (Road Markings).				
6.3.1.1	Q823.1	Type 1 [continuity line]: 150mm wide intermittent line with 1000mm line and 1000mm gap.	m			
6.3.1.2	Q823.2	Type 1 [continuity line]: 200mm wide intermittent continuity line with 1000mm line and 1000mm gap.	m			
6.3.1.3	Q823.3	Type 2 [give way line]: 200mm wide intermittent line with 300mm line and 300mm gap.	m			
6.3.1.4	Q823.4	Type 3 [centre/lane line (urban area)]: 100mm wide intermittent line with 1000mm line and 1700mm gap.	m			
6.3.1.5	Q823.5	Type 4 [centre/lane line (rural area)]:100mm wide intermittent line with 4500mm line and 7500mm gap.	m			
6.3.1.6	Q823.6	Type 5 [centre/lane line (rural area)] : 100mm wide intermittent line with 2700mm line and 4500mm gap.	m			
6.3.1.7	Q822.1	Type 6 [edge line]: 150mm wide continuous line.	m			
6.3.1.8	Q822.2	Type 7 [stop line]: 300mm wide continuous line.	m			
6.3.1.9	Q822.3	Type 8 [stop line with pedestrian crossing]: 300mm wide continuous line.	m			
6.3.1.10	Q824.1	Type 9 [Pedestrian zebra crossing].	m ²			
6.3.1.11	Q822.4	Type 10 [double line]: 100mm wide continuous double line.	m			
6.3.1.12	Q823.7	Type 11 [climbing lane line]: 100mm wide intermittent double line with 2700mm line and 4500mm gap.	m			
6.3.1.13	Q823.8	Type 12 [bus stop line]: 100mm wide intermittent line with 900mm line and 900mm gap.	m			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.3		<u>PAVEMENT MARKINGS (Cont'd)</u>				
6.3.1.14	Q823.9	Type 13 [turn line]:100mm wide intermittent double line with 600mm line and 600mm gap.	m			
6.3.1.15	Q824.2	Type 14 [Yellow box marking]	m ²			
6.3.1.16	Q824.3	Chevron marking for diverging traffic.	m ²			
6.3.1.17	Q824.4	Chevron marking for merging traffic.	m ²			
6.3.1.18	Q824.5	Chevron marking for cross hatching	m ²			
6.3.1.19	Q829.1	Raised Rib Thermoplastic as shown in Drawings.	m ²			
6.3.2		<u>Transverse Bar</u>				
6.3.2.1	Q829.2	3mm thick of transverse bar as shown in Drawings.	m ²			
6.3.2.2	Q829.3	4mm thick of transverse bar as shown in Drawings.	m ²			
6.3.2.3	Q829.4	5mm thick of transverse bar as shown in Drawings.	m ²			
6.3.2.4	Q829.5	6mm thick of transverse bar as shown in Drawings.	m ²			
6.3.2.5	Q829.6	7mm thick of transverse bar as shown in Drawings.	m ²			
6.3.3		<u>Direction arrow and pavement marking for roads.</u>				
6.3.3.1	Q821.1	Single straight directional arrow.	nr			
6.3.3.2	Q821.2	Single turning directional arrow.	nr			
6.3.3.3	Q821.3	Double headed directional arrow.	nr			
6.3.3.4	Q821.4	Letter and shapes pavement marking.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.4		<u>MILD STEEL RAILING</u> Rate for steel railing shall be deemed to include supply and installation and others ancillary work.				
6.4.1	Q845.1	Pedestrian barrier of Type 1 as shown in Drawings.	m			
6.4.2	Q845.2	Pedestrian barrier of Type 2 as shown in Drawings.	m			
6.4.3	Q845.3	Pedestrian barrier of Type 3 as shown in Drawings.	m			
6.5		<u>INTERLOCKING PAVING BLOCK FOR FOOTPATH</u> Rate for interlocking paving block shall be deemed to include base preparation, joints, and cutting.				
6.5.1	Q661	Precast interlocking concrete block of [...mm x ...mm x ...mm] thick as shown in Drawings inclusive of compacted sand layer and other accessories.	m ²			
6.6	Q700	<u>KERBS, CHANNEL, AND EDGINGS</u> Rate for kerbs, channels, and edgings shall be deemed to include beds, backings, reinforcement, joints, and cutting.				
6.6.1	Q720.1	<i>In situ</i> concrete kerbs, Type SM1 as shown in Drawings.	m			
6.6.2	Q720.2	<i>In situ</i> concrete kerbs, Type SM2 as shown in Drawings.	m			
6.6.3	Q720.3	<i>In situ</i> concrete kerbs, Type B1 as shown in Drawings.	m			
6.6.4	Q720.4	<i>In situ</i> concrete kerbs, Type B2 as shown in Drawings.	m			
6.6.5	Q720.5	<i>In situ</i> concrete kerbs, Type M1 as shown in Drawings.	m			
6.6.6	Q720.6	<i>In situ</i> concrete kerbs, Type M2 as shown in Drawings.	m			
6.6.7	Q730	Concrete edgings of [...mm x ...mm high].	m			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.6	Q700	<u>KERBS, CHANNEL, AND EDGINGS (Cont'd)</u>				
6.6.8	Q740	Concrete channels, as shown in Drawings.	m			
6.6.9	Q710.1	Precast concrete kerbs, Type SM1 as shown in Drawings.	m			
6.6.10	Q710.2	Precast concrete kerbs, Type SM2 as shown in Drawings.	m			
6.6.11	Q710.3	Precast concrete kerbs, Type B1 as shown in Drawings.	m			
6.6.12	Q710.4	Precast concrete kerbs, Type B2 as shown in Drawings.	m			
6.6.13	Q710.5	Precast concrete kerbs, Type M1 as shown in Drawings.	m			
6.6.14	Q710.6	Precast concrete kerbs, Type M2 as shown in Drawings.	m			
6.7		<u>DELINEATORS</u>				
6.7.1	Q831.1	Non-illuminated high intensity prismatic retro-reflective sheeting chevron delineators mounted on aluminium alloy sign plate as shown in the Drawings.	nr			
6.7.2	Q831.2	Non-illuminated high intensity prismatic retro-reflective sheeting chevron delineators mounted on aluminium composite sign plate as shown in the Drawings.	nr			
6.7.3	Q832	Delineator posts as shown in Drawings.	nr			
6.7.4	Q833	Retroreflective raised pavement markers as per Drawings.	nr			
6.8		<u>MISCELLANEOUS</u>				
6.8.1	Q857	Right of way (ROW) marker as shown in Drawings.	nr			
6.8.2	Q859.1	Route marker inclusive post as shown in Drawings.	nr			
6.8.3	Q854.1	Hectometre marker inclusive of post as shown in Drawings.	nr			
6.8.4	Q859.2	Flexible post as shown in Drawings.	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
6.8		<u>MISCELLANEOUS (Cont'd)</u>				
6.8.5	Q855	Anti-glare screen of [...m] height using corrugated sections.	m			
6.8.6	Q853.1	Kilometre post, [Type A].	nr			
6.8.7	Q853.2	Kilometre post, [Type B].	nr			
6.8.8	Q859.3	Impact attenuator with [...] number of bays of overall length [...mm] including nose, concrete pad, anchor block, and all necessary fitting as specified and shown in the drawings.	nr			
6.8.9	Q851	Crash cushion as per Specification.	nr			
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PROJECT :

BILL NO. 7 - GEOTECHNICAL WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.1		<u>SOIL IMPROVEMENT</u>				
7.1.1		<u>Soil Replacement / Stability</u>				
		The following items shall include of supply and lay geotextile, fill and compact suitable material/sand layer. *** Embankment fill refer to BQ3 - Earthwork***				
7.1.1.1		<u>Geotextiles</u>				
7.1.1.1.1	F410.1	Supply and lay nonwoven geotextile in according to Drawing.	m ²			
7.1.1.1.2	F410.2	Supply and lay woven geotextile in according to Drawing.	m ²			
7.1.1.2		<u>Filling (Replacement)</u>				
7.1.1.2.1	F331	Replace unsuitable material with suitable excavated material.	m ³			
7.1.1.2.2	F332	Replace unsuitable material with imported material from Contactor's own source.	m ³			
7.1.1.2.3	F334.1	Replace unsuitable material with granular material as per Drawings.	m ³			
7.1.1.2.4	F334.2	Replace unsuitable material with sand as per Drawings.	m ³			
7.1.2		<u>Prefabricated Vertical Drains</u>				
		The following items shall include of supply and lay geotextile and PVD, filling and compact suitable material/sand layer. *** Embankment fill refer to BQ3 - Earthwork***				
7.1.2.1		<u>Plant and Equipment</u>				
7.1.2.1.1	G110	Provision of all necessary plant and equipment, transportation to the Site, handling, assembling, and removal off the Site after completion of operation.	sum			
7.1.2.1.2	G120	Moving and handling all necessary plant and equipment within the Site and from location to location as often as is and whenever necessary for the execution of whole operation.	sum			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.1.2.2		<u>Geotextiles</u>				
7.1.2.2.1	F410.1	Supply and lay nonwoven geotextile in according to Drawing.	m ²			
7.1.2.2.2	F410.2	Supply and lay woven geotextile in according to Drawing.	m ²			
7.1.2.3		<u>Vertical Drain</u>				
7.1.2.3.1	G510	[.....mm x .....mm] prefabricated vertical drains as per Drawing.	m			
7.1.2.4		<u>Filling (Replacement)</u>				
7.1.2.4.1	F331	Replace unsuitable material with suitable excavated material.	m ³			
7.1.2.4.2	F332	Replace unsuitable material with imported material from Contactor's own source.	m ³			
7.1.2.4.3	F334.1	Replace unsuitable material with granular material as per drawings.	m ³			
7.1.2.4.4	F334.2	Replace unsuitable material with sand as per drawings.	m ³			
7.1.3		<u>Stone Columns / Geopiers / Soil Cement Column / Chemical Column / Sand Column / Vibro Compaction / Dynamic Replacement *</u>				
7.1.3.1		<u>Plant and Equipment</u>				
7.1.3.1.1	G110	Provision of all necessary plant and equipment, transportation to the Site, handling, assembling, and removal off the Site after completion of operation.	sum			
7.1.3.1.2	G120	Moving and handling all necessary plant and equipment within the Site and from location to location as often as is and whenever necessary for the execution of whole operation.	sum			
7.1.3.2		<u>Geotextiles</u>				
7.1.3.2.1	F410.1	Supply and lay nonwoven geotextile in according to Drawing.	m ²			
7.1.3.2.2	F410.2	Supply and lay woven geotextile in according to Drawing.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.1.3.3		<u>Sand / Aggregate / Stone Column</u>				
7.1.3.3.1	G560	[.....mm] diameter stone column as per Drawing.	m			
7.1.3.3.2	G550	[.....mm] diameter aggregate column as per Drawing.	m			
7.1.3.3.3	G540	[.....mm] diameter sand column as per Drawing.	m			
7.1.3.4		<u>Vibro Compaction</u>				
7.1.3.4.1	G530	Vibro compaction up to depth of [..... m] as per Drawing.	nr			
7.1.3.5		<u>Dynamic Replacement</u>				
7.1.3.5.1	G520	Dynamic replacement using [..... tonne] drop hammer with [.....] drops at height of [..... m].	nr			
7.1.3.6	F312.4	Imported sand from contractor own source as per Drawing.	m ³			
7.1.3.7	H510	Carry out load test to maximum test load of kN as per Specification.	nr			
7.1.4		<u>Surcharge</u>				
7.1.4.1	F300	<u>Filling For Surcharge</u>				
		The following items for filling shall include compaction, and additional filling necessitated by settlement or penetration into underlying material as applicable.				
7.1.4.1.1	F321	Using suitable excavated material as per Specification (to form as surcharge). Rate to include formation of benches.	m ³			
7.1.4.1.2	F322	Imported material from Contactor's own source as per Specification (to form as surcharge). Rate to include formation of benches.	m ³			
7.1.4.1.3	F324	Other stated material – granular material as per drawings (to form as surcharge). Rate to include formation of benches.	m ³			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.1.4.2		<u>Cut and Dispose of Surcharge Material</u>				
		Excavation in cut shall be deemed to include trimming and preparation of excavated surface and transportation from source to place of fill or disposal.				
7.1.4.2.1	F131.1	Excavate in earth material to required level and sent to disposal site approved by the S.O./P.D.	m ³			
7.1.4.2.2	F131.2	Excavate in earth material to required level and sent to disposal site approved by the S.O./P.D. [Rate to include compaction at disposal site].	m ³			
7.1.4.2.3	F131.3	Excavate in earth material to required level and sent to disposal site approved by the S.O./P.D outside of boundary - contractor dump site.	m ³			
7.1.5		<u>Piled Embankment</u>				
7.1.5.1		<u>Precast Reinforced Concrete Piles</u>				
7.1.5.1.1		<u>Plant and Equipment</u>				
7.1.5.1.1.1	H110	Provision of all necessary piling plant and equipment, transportation to the Site, handling, assembling, and removal off the Site after completion of operation.	sum			
7.1.5.1.1.2	H120	Moving and handling of all piling plant and equipment within the Site and from location to location as often as is, and whenever necessary for the execution of the whole piling operation.	sum			
7.1.5.1.1.3	H130	Temporary staging [for piling work at the banks of Sg. (.....)].	sum			
7.1.5.1.2		<u>[..... mm] square precast reinforced concrete piles as per Drawing.</u>				
7.1.5.1.2.1	H251.1	Supply initial piles with (<i>type of shoes</i>) of [..... m] length.	nr			
7.1.5.1.2.2	H251.2	Supply extension piles of [..... m] length.	nr			
7.1.5.1.2.3	H252.1	Depth driven.	m			
7.1.5.1.2.4	H252.2	Depth driven raked at inclination ratio of [.....].	m			
7.1.5.1.2.5	H254	Jointing with butt weld all round as shown in the Drawing.	nr			
7.1.5.1.2.6	H256	Cut-off piles. Rate to include preparing heads.	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.1.5.1.2.7		<u>Pile Test</u>				
7.1.5.1.2.7 (i)	H510.1	Initial static load test (maintain load test) on [....mm xmm] precast reinforced concrete piles up to two times working load of (...) kN.	nr			
7.1.5.1.2.7 (ii)	H510.2	Subsequent static load test (maintain load test) , on [.....mm x .....mm] precast reinforced concrete piles up to two times working load of (...) kN.	nr			
7.1.5.1.2.7 (iii)	H520	PDA test on [.....mm x .....mm] precast reinforced concrete piles.	nr			
7.1.5.1.2.7 (iv)	H530	Pile integrity test (sonic echo test) on [.....mm x .....mm] precast reinforced concrete piles.	nr			
7.1.5.1.2.7 (v)	H560.1	Statnamic test on [.....mm x .....mm] precast reinforced concrete piles.	nr			
7.1.5.2		<u>RC Slab</u>				
		<u>Foundation</u>				
		Excavation for foundation shall include upholding sides of excavation, preparation of excavated surface, additional excavation to provide working space and removal of dead services.				
7.1.5.2.1	F141	Excavate in earth material commencing from platform level to required depth.	m ³			
		<u>In Situ Concrete Design Mix</u>				
		Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
		<u>Grade [C.....] Concrete</u>				
7.1.5.2.2	I111	Mass concrete blinding, [.....mm] thick [to pile cap].	m ²			
		<u>Grade: [C.....] Concrete</u>				
7.1.5.2.3	I142	Reinforced concrete ground slab.	m ³			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		<u>Formwork</u>				
		Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.				
7.1.5.2.4	I411	F1: rough finish to ground slabs.	m ²			
		<u>Reinforcement</u>				
		Rate for reinforcement shall be deemed to include labour for cutting, bending, and placing.				
		<u>High Tensile Bars</u>				
7.1.5.2.5	I523	Nominal diameter: 12 mm.	t			
7.1.5.2.6	I524	Nominal diameter: 16 mm.	t			
7.1.5.2.7	I525	Nominal diameter: 20 mm.	t			
7.1.5.2.8	I526	Nominal diameter: 25 mm.	t			
7.1.5.2.9	I527	Nominal diameter: 32 mm.	t			
7.1.5.2.10	I528	Nominal diameter: 40 mm.	t			
7.2		<u>INSTRUMENTATION</u>				
7.2.1	D631	Settlement surface marker as shown in the Drawings.	nr			
7.2.2	D632	Settlement plate as shown in the Drawings.	nr			
7.2.3		<u>Piezometer</u>				
7.2.3.1	D610.1	Piezometer as shown in the drawings not exceeding 5.00 m. Rate to include pre-boring and installation.	nr			
7.2.3.2	D610.2	Piezometer as shown in the drawings exceeding 5.00 m but not exceeding 10.00 m. Rate to include pre-boring and installation.	nr			
7.2.3.3	D610.3	Piezometer as shown in the drawings exceeding 10.00 m but not exceeding 15.00 m. Rate to include pre-boring and installation.	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.2.4		<u>Inclinometer</u>				
7.2.4.1	D620.1	Inclinometer as shown in the drawings not exceeding 5.00 m. Rate to include pre-boring and installation.	nr			
7.2.4.2	D620.2	Inclinometer as shown in the drawings exceeding 5.00 m but not exceeding 10.00 m. Rate to include pre-boring and installation.	nr			
7.2.4.3	D620.3	Inclinometer as shown in the drawings exceeding 10.00 m but not exceeding 15.00 m. Rate to include pre-boring and installation.	nr			
7.2.5	D650	Deep levelling datum.	nr			
7.2.6	D660	Monitoring of instrument for the above instrument at the project site by [Specialist]. Rate to include preparation of monitoring report inclusive of analyse, findings and recommendation to be submitted on a [monthly] basis.	nr			
7.3		<u>SLOPE STABILISATION WORKS</u>				
7.3.1		<u>Soil Nailing</u>				
7.3.1.1	G100	<u>Plant and Equipment</u>				
7.3.1.1.1	G110	Provision of all necessary plant and equipment, transportation to the Site, handling, assembling, and removal off the Site after completion of operation.	sum			
7.3.1.1.2	G120	Moving and handling all necessary plant and equipment within the Site and from location to location as often as is and whenever necessary for the execution of whole operation.	sum			
7.3.1.1.3	G130	Temporary staging.	sum			
7.3.1.2		<u>Soil Nailing Work</u> Rate for soil nailing shall be deemed to include drilling of borehole, corrugated HDPE pipe if applicable, sleeve grouting, sealant compound, galvanised steel bearing plate, and all necessary formwork. [..... mm dia.] soil nail with [T....] reinforcement bar as shown in the Drawings.				
7.3.1.2.1	G311.1	6 m long.	nr			
7.3.1.2.2	G311.2	9 m long.	nr			
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BILL NO. 7 - GEOTECHNICAL WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.3.1.2.3	G311.3	12 m long.	nr			
7.3.1.2.4	G311.4	Exceeding 12 m long but not exceeding 18 m long (.....m long). To include coupling.	nr			
7.3.1.3		<u>Test</u> Pull out test on soil nail, rate to include all necessary equipment and submission of procedure, records, and report.				
7.3.1.3.1	G312.1	[.....] times the working load of [..... kN].	nr			
7.3.1.4		<u>Horizontal Drain</u> Rate for horizontal drain shall be deemed to include drilling and perforated pipe. [..... mm] diameter uPVC horizontal drain as shown in the Drawings.				
7.3.1.4.1	G351	In earth.	m			
7.3.1.4.2	G352	In rock.	m			
7.3.1.5	G410	[..... mm] thick [C.....] guniting. Rate shall be deemed to include steel fabric mesh, PVC drain pipe, dowel bar, and filter material as shown in the Drawings.	m ²			
7.3.2		<u>Rock Bolt</u>				
7.3.2.1	G100	<u>Plant and Equipment</u>				
7.3.2.1.1	G110	Provision of all necessary plant and equipment, transportation to the Site, handling, assembling, and removal off the Site after completion of operation.	sum			
7.3.2.1.2	G120	Moving and handling all necessary plant and equipment within the Site and from location to location as often as is and whenever necessary for the execution of whole operation.	sum			
7.3.2.1.3	G130	Temporary staging.	sum			
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BILL NO. 7 - GEOTECHNICAL WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.3.2.2		<u>Installation of Rock Bolt</u> Rate for rock bolt shall be deemed to include drilling of borehole, reinforcement bar, reinforced concrete pad, sleeve grouting, sealant compound, and all necessary formwork. [Type.....] with [T.....] bolt as shown in the Drawings.				
7.3.2.2.1	G321.1	2 m long.	nr			
7.3.2.2.2	G321.2	4 m long.	nr			
7.3.2.2.3	G321.3	6 m long.	nr			
7.3.2.2.4	G321.4	Exceeding 6 m long but not exceeding 9 m [.....m] long.	nr			
7.3.2.3	G410	<u>Guniting For Rock Bolt</u> [..... mm] thick [C.....] guniting. Rate shall be deemed to include steel fabric mesh, PVC drain pipe, dowel bar, and filter material as shown in the Drawings.	m ²			
7.3.2.4	G322	<u>Testing</u> Pull out test on rock bolt as specified, rate to include all necessary equipment and submission of procedure, records, and report.	nr			
7.3.3		<u>Ground Anchor</u>				
7.3.3.1	G100	<u>Plant and Equipment</u>				
7.3.3.1.1	G110	Provision of all necessary plant and equipment, transportation to the Site, handling, assembling, and removal off the Site after completion of operation.	sum			
7.3.3.1.2	G120	Moving and handling all necessary plant and equipment within the Site and from location to location as often as is and whenever necessary for the execution of whole operation.	sum			
7.3.3.1.3	G130	Temporary staging.	sum			
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PROJECT :

BILL NO. 7 - GEOTECHNICAL WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.3.3.2		<p><u>Installation of Ground Anchor</u></p> <p>Rate for ground anchor shall be deemed to include prestressed tendons, drilling, grouting, concreting, and all necessary formwork.</p> <p>[Type] ground anchor as shown in the Drawings.</p>				
7.3.3.2.1	G331	In earth.	m			
7.3.3.2.2	G332	In natural hard material.	m			
7.3.3.2.3	G333	In rock.	m			
		<u>Testing</u>				
7.3.3.3	G334	Pull out test on ground anchor as per Specification, rate to include all necessary equipment and submission of procedure, records, and report.	nr			
7.3.4		<p><u>Horizontal Drains</u></p> <p>Rate for horizontal drain shall be deemed to include drilling and perforated pipe.</p> <p>[..... mm] diameter uPVC horizontal drain as shown in the Drawings.</p>				
7.3.4.1	G351	In earth	m			
7.3.4.2	G352	In rock.	m			
7.3.5		<p><u>Concrete Buttress</u></p> <p>Rate for concrete buttress shall be deemed to included steel fabric mesh, PVC drain pipe, dowel bars, filter material, and all necessary formworks as per Drawing</p>				
7.3.5.1	G340.1	[C.....] concrete buttress with average thickness [not exceeding 300 mm].	m ²			
7.3.5.2	G340.2	[C.....] concrete buttress with average thickness [exceeding 300 mm but not exceeding 400 mm].	m ²			
7.5.5.3	G340.3	[C.....] concrete buttress with average thickness exceeding 400 mm.	m ²			
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BILL NO. 7 - GEOTECHNICAL WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.3.6	G400	<u>Surface Protection</u>				
7.3.6.1	G410	[..... mm] thick [C.....] guniting. Rate shall be deemed to include steel fabric mesh, PVC drain pipe, dowel bar, and filter material as shown in the Drawing.	m ²			
7.3.6.2	G420	[..... mm] thick concrete articulating slab as shown in the Drawing. Rate to include preparation of surface, blinding, aggregate, geotextile, and all necessary concrete and formwork.	m ²			
7.3.6.3	G430	Rock netting [with PVC-coated wire gauge size of [..... mm] as per Drawing. Rate to include all necessary accessories.	m ²			
7.3.6.4	G440	[..... mm] thick size [..... mm] stone pitching as per Drawing.	m ²			
7.3.6.5	G450	[..... mm] thick size [..... mm] stone revetment as per Drawing.	m ²			
7.4		<u>RETAINING SYSTEM</u>				
7.4.1		<u>Reinforced Soil Wall</u>				
7.4.1.1		<u>Plant and Equipment</u>				
7.4.1.1.1	G110	Provision of all necessary plant and equipment, transportation to the Site, handling, assembling, and removal off the Site after completion of operation.	sum			
7.4.1.1.2	G120	Moving and handling all necessary plant and equipment within the Site and from location to location as often as is and whenever necessary for the execution of whole operation.	sum			
7.4.1.1.3	G130	Temporary staging.	sum			
7.4.1.2		<u>Installation</u> [Precast reinforced concrete wall facing panels], rate to include galvanised steel soil reinforcement, connections and jointing, geotextile, and accessories for wall joints for wall height:				
7.4.1.2.1	G241.1	Not exceeding 6 m.	m ²			
7.4.1.2.2	G241.2	Exceeding 6 m but not exceeding 9 m.	m ²			
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BILL NO. 7 - GEOTECHNICAL WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.4.1.2.3	G241.3	Exceeding 9 m but not exceeding 12 m.	m ²			
7.4.1.2.4	G241.4	Exceeding 12 m but not exceeding 15 m.	m ²			
7.4.1.2.5	G244	[..... mm wide x mm] thick C..... mass concrete leveling pad. <u>In Situ Concrete Design Mix</u> Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete. <u>Grade [C.....] Concrete</u>	m			
7.4.1.2.6	I144	Reinforced concrete capping beam. <u>Formwork</u> Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.	m ³			
7.4.1.2.7	I433	F2: fair finish to capping beam. <u>Reinforcement</u> Rate for reinforcement shall be deemed to include labour for cutting, bending, and placing. <u>High Tensile Bars</u>	m ²			
7.4.1.2.8	I524	Nominal diameter: 16 mm.	t			
7.4.1.2.9	I525	Nominal diameter: 20 mm.	t			
7.4.1.2.10	I526	Nominal diameter: 25 mm.	t			
7.4.1.2.11	I527	Nominal diameter: 32 mm.	t			
7.4.1.3	G243	Granular filling as per Specification and as shown in the Drawing.	m ³			
7.4.1.4	G242	Earth filling as per Specification and as shown in the Drawing.	m ³			
7.4.1.5	G245	Tensile test, rate to include all necessary equipment and submission of procedure, records, and report.	nr			
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BILL NO. 7 - GEOTECHNICAL WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.4.2		<u>Reinforced Soil Slope</u>				
7.4.2.1	G231	Geotextile with minimum long term design strength of [.....] as soil reinforcement as shown in the Drawing.	m ²			
7.4.2.2	G232	Geogrid with minimum long term design strength of [.....] as soil reinforcement as shown in the Drawing.	m ²			
7.4.2.3	G233	Earth filling as per Specification and as shown in the Drawing.	m ³			
7.4.2.4	G234	Granular filling as per Specification and as shown in the Drawing.	m ³			
7.4.2.5	G235	[.....] erosion protection mats with minimum tensile strength of [.....] kN/m.	m ²			
7.4.2.6	F520.1	Hydroseeding as per Specification.	m ²			
7.4.3		<u>Reinforced Concrete Retaining Wall</u>				
		<u>Excavation</u>				
7.4.3.1		Excavation for [..... m] thick [diaphragm wall] not exceeding depth [..... m] for the following. Rate to include preparation and upholding sides of excavation.				
7.4.3.1.1	G711	Earth.	m ³			
7.4.3.1.2	G712	Natural hard material.	m ³			
7.4.3.1.3	G713	Rock.	m ³			
7.4.3.1.4	G714	Artificial hard material.	m ³			
		<u>In Situ Concrete Design Mix</u>				
		Rate for <i>in situ</i> concrete designed mix shall be deemed to include placing and compaction of concrete.				
		<u>Grade [C.....] Concrete</u>				
7.4.3.2	I111.1	Mass concrete blinding, [..... mm] thick [to footing].	m ²			
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BILL NO. 7 - GEOTECHNICAL WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		<u>Formwork</u>				
		Rate for formwork shall be deemed to include the projections and intrusions and any temporary staging required.				
		<u>Sides</u>				
7.4.3.3	I411.1	F1: rough finish to bases.	m ²			
7.4.3.4	I175	[Grade C.....] tremie mix concrete.	m ³			
		<u>Drainage</u>				
		Item for drains shall be deemed to include geotextiles fabric, lining, and filter material.				
7.4.3.5	P320	Outlet drains; weephole [..... mm] diameter UPVC pipe including fittings. Rate to include bends, filter fabric and concrete surround.	m			
7.4.3.6	F314.2	Other stated material – granular material as per Specification.	m ³			
		<u>Joints</u>				
		Rate for joints shall be deemed to include formwork.				
7.4.3.7	I614.2	[..... mm] wide rubber waterstop with central bulb. Rate to include cutting and jointing of waterstops and provision of special fittings at angles and junctions.	m			
7.4.3.8	I616	Dowels – plain, [..... mm diameter x mm long] steel bars at [..... mm] centres.	nr			
7.4.3.9	I615.1	Sealed [..... mm x mm] grooves with polyether sealant.	m			
7.4.3.10		<u>Reinforcement</u>				
		Rate To Include Labour for Cutting, Bending and Placing.				
7.4.3.10.1		<u>Mild steel bar reinforcement</u>				
7.4.3.10.1.1	G731.1	Nominal diameter: [10 mm].	t			
7.4.3.10.1.2	G731.2	Nominal diameter: [12 mm].	t			
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PROJECT :

BILL NO. 7 - GEOTECHNICAL WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.4.3.10.2		<u>High tensile steel bar reinforcement</u>				
7.4.3.10.2. 1	G732.1	Nominal diameter: [12 mm].	t			
7.4.3.10.2. 2	G732.2	Nominal diameter: [16 mm].	t			
7.4.3.10.2. 3	G732.3	Nominal diameter: [20 mm].	t			
7.4.3.10.2. 4	G732.4	Nominal diameter: [25 mm].	t			
7.4.3.10.2. 5	G732.5	Nominal diameter: [32 mm].	t			
	N600	<u>Bituminous or Coal Tar Paint</u> Prepare and apply [.....] coats of bituminous or coal tar paint to:				
7.4.3.11	N631.3	<u>Smooth Surfaces</u> Smooth concrete surfaces of [retaining walls] formed using Class F2 formwork, exceeding 300 mm girth.	m ²			
7.4.3.12	G740	Waterproofed joints.	sum			
7.4.4		<u>Gabion</u> <u>Foundation</u> Excavation for foundation shall include upholding sides of excavation, preparation of excavated surface, additional excavation to provide working space and removal of dead services.				
7.4.4.1	F141	Excavate in earth material [e.g. below gabion].	m ³			
		<u>Filling</u> The following items for filling shall include compaction, and additional filling necessitated by settlement or penetration into underlying material as applicable.				
7.4.4.2		<u>General</u>				
7.4.4.2.1	F311	Using suitable excavated material as per Specification.	m ³			
7.4.4.2.2	F312.1	Imported material from Contactor's own source as per Specification.	m ³			
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PROJECT :

BILL NO. 7 - GEOTECHNICAL WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.4.4.2.3	G211.1	[..... m x m x m] rock-filled gabion with PVC-coated wire gauge size of [.....] mm as shown in the Drawing.	m ³			
7.4.4.2.4	G211.2	[..... m x m x m] rock-filled gabion with PVC-coated wire gauge size of [..... mm] as shown in the Drawing.	m ³			
7.4.4.2.5	G211.3	[..... m x m x m] rock-filled gabion with PVC-coated wire gauge size of [..... mm] as shown in the Drawing. Rate to include for laying underwater.	m ³			
7.4.4.2.6	G212	Rock-filled gabion mattress, [..... mm] thick with PVC-coated wire gauge size of [..... mm] as shown in the Drawing.	m ²			
7.4.4.2.7	G213	Non-woven geotextile as separator as per Drawing.	m ²			
7.4.5		<u>Cribwall</u>				
		<u>Plant and Equipment</u>				
7.4.5.1	G110	Provision of all necessary plant and equipment, transportation to the Site, handling, assembling, and removal off the Site after completion of operation.	sum			
7.4.5.2	G120	Moving and handling all necessary plant and equipment within the Site and from location to location as often as is and whenever necessary for the execution of whole operation.	sum			
7.4.5.3	G130	Temporary staging.	sum			
		Item for cribwall shall be deemed to include precast reinforced concrete (C...) components and granular infill material as per Specification.				
7.4.5.4	G221	Single cell with [..... mm] header as shown in the Drawing.	m ²			
7.4.5.5	G222	Double cell with [..... mm + mm] header as shown in the Drawing.	m ²			
7.4.5.6	G223	Triple cell with [..... mm + mm + mm] header as shown in the Drawing.	m ²			
7.4.5.7	G224	Quadruple cell with [..... mm + mm + mm+ mm] as shown in the Drawing.	m ²			
7.4.5.8	G225	Non-woven geotextile as separator as per Drawing.	m ²			
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PROJECT :

BILL NO. 7 - GEOTECHNICAL WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
7.4.6	G600	<u>Grouting Work</u>				
7.4.6.1		Drilling for [..... mm] diameter grout holes for depth not exceeding [..... m] in:-				
7.4.6.1.1	G611	Earth.	m			
7.4.6.1.2	G612	Rock; rate to include drilling in natural and artificial hard material.	m			
7.4.6.2	G620	uPVC sleeve pipes for [..... mm] diameter grout hole. Rate to include grouting of annulus space between the sleeve pipe and the drill holes.	m			
		<u>Grout Injection</u>				
7.4.6.3		Grout mixed components: -				
7.4.6.3.1	G631	Cement.	t			
7.4.6.3.2	G632	Sand.	t			
7.4.6.3.3	G633	Bentonite.	t			
7.4.6.3.4	G634	Aluminium powder.	kg			
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PROJECT :

BILL NO. 7 - GEOTECHNICAL WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
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PROJECT :

BILL NO. 9 - TRAFFIC MANAGEMENT AND CONTROL

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
9.1	C100	<u>TRAFFIC MANAGEMENT PLAN</u> Traffic management plan shall be deemed to include emergency response plan and the associated work.				
9.1.1	C120	Preparation of traffic management plan. Rate to include the cost of any survey required, literature, references, consultations, and the production of the document. It shall also include the cost for the engagement of qualified traffic engineers required for carrying out the respective study and the preparation of the said plan.	sum			
9.2	C130	<u>TRAFFIC MANAGEMENT TEAM / EMERGENCY RESPONSE TEAM</u>				
9.2.1	C132	Traffic management officer.	man-mth			
9.2.2	C133	Supervisor.	man-mth			
9.2.3	C134	Traffic controller.	man-mth			
9.3	C200	<u>TEMPORARY ROAD FURNITURE</u> Items for temporary road furniture shall be deemed to include the supply, installation, maintenance, and removal upon completion. The supply of temporary road furniture shall be deemed to include base preparation, cost of materials, fabrication, and fixing including posts, struts, bolts and nuts, base, storage, and transportation. Installation of temporary road furniture shall be deemed to include cost for multiple shifting within the contractual boundaries and its vicinities that is affected by the traffic management plan. Temporary road furniture shall be deemed to include cost for the inspection, immediate repair and replacement of any damaged, missing or stolen items throughout the duration of the construction, and removal upon completion.				
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PROJECT :

BILL NO. 9 - TRAFFIC MANAGEMENT AND CONTROL

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
9.3.1		<u>Temporary Traffic Signs</u> Temporary traffic signs shall be in accordance with the latest version of Arahan Teknik (Jalan) 2C/85 and Specification for Road Works: Section 6.				
9.3.1.1	C211.1	Portable non-illuminated fluorescent orange prismatic retro-reflective sheeting not exceeding 1.0 m ² .	nr			
9.3.1.2	C211.2	Portable non-illuminated fluorescent orange prismatic retro-reflective sheeting exceeding 1.0 not exceeding 2.0 m ² .	nr			
9.3.1.3	C211.3	Portable non-illuminated fluorescent orange prismatic retro-reflective sheeting exceeding 2.0 not exceeding 3.0 m ² .	nr			
9.3.1.4	C211.4	Portable non-illuminated fluorescent orange prismatic retro-reflective sheeting exceeding 3.0 not exceeding 4.0 m ² .	nr			
9.3.1.5	C211.5	Portable non-illuminated fluorescent orange prismatic retro-reflective sheeting exceeding 4.0 m ² .	nr			
9.3.1.6	C212	Portable variable message signs (VMS) of [...m] x [...m] as per Drawing.	nr			
9.3.2		<u>Barriers and Barricades</u>				
9.3.2.1	C221	Heavy duty water- or sand-filled PVC barrier of the [...] type.	nr			
9.3.2.2	C222	[Precast movable reinforced] concrete barrier of the [...] type.	nr			
9.3.2.3	C223	Wooden barricade.	nr			
9.3.2.4	C224	Vehicle mounted impact attenuator.	nr			
9.3.2.5	C225	Sand bags.	m ³			
9.3.2.6	C226	Temporary guardrail.	m			
9.3.3		<u>Delineators</u>				
9.3.3.1	C231	[...mm] PVC Traffic cones with reflective bands.	nr			
9.3.3.2	C232	[Double sided reflective] string delineators.	m			
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BILL NO. 9 - TRAFFIC MANAGEMENT AND CONTROL

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
9.3.3.3	C233	[.....mm x .....mm] battery operated flashing arrows on powder coated mild steel plate.	nr			
9.3.3.4	C234	[....mm] diameter battery operated revolving beacon lights.	nr			
9.3.3.5	C235	[....mm] diameter polycarbonate lens battery operated blinkers.	nr			
9.3.4		<u>Temporary Road Markings</u>				
9.3.4.1	C241	Letters and shapes.	nr			
9.3.4.2	C241.1	Single straight arrow.	nr			
9.3.4.3	C241.2	Single turning arrow.	nr			
9.3.4.4	C241.3	Double headed arrow.	nr			
9.3.4.5	C242	[....mm] wide continuous line.	m			
9.3.4.6	C243	[....mm] wide intermittent line with [....mm] line and [....mm] gap.	m			
9.3.4.7	C244	Chevron marking.	m ²			
9.3.4.8	C245	Transverse bars.	m ²			
9.3.5		<u>Temporary Traffic Signals & Road Lighting</u>				
9.3.5.1	C213.1	Traffic signals with [...] optical system mounted on poles as per Specification. Rate to include signal post, signal lanterns, traffic controllers, cabling, and removal upon completion.	set			
9.3.5.2	C213.2	Traffic signals with [...] optical system mounted on gantry as per Specification. Rate to include signal lanterns, traffic controllers, cabling, and removal upon completion.	set			
9.3.5.3	C250.1	Mechanical robot flagman [of the half-man type].	nr			
9.3.5.4	C250.2	Mechanical robot flagman [of the full-man type].	nr			
9.3.5.5	C260	Temporary road lightings.	nr			
9.3.5.6	C290	Flood Lightings.	nr			
		Page Total carried to Summary of Bill No. 9				

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BILL NO. 9 - TRAFFIC MANAGEMENT AND CONTROL

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
9.4	C300	<u>TRAFFIC MANAGEMENT REPORT</u>				
9.4.1	C310	Traffic management safety report [on a monthly basis in five sets].	sum			
9.4.2	C320	Road safety audit report [on a quarterly basis in five sets]. Rate to include the cost of any survey required, literatures, references, consultations, and the production of the document.	sum			
9.5		<u>TEMPORARY ROAD DIVERSION</u>				
9.5.1		<u>Earthwork</u>				
9.5.1.1		<u>Excavate, Load, Haul and Deposit to form Embankment</u>				
		<u>Cut to Fill</u> Excavation in cut shall be deemed to include trimming and preparation of excavated surface and transportation from source to place of fill.				
9.5.1.1.1	F121.1	Excavate in earth material from original ground level [to form embankment].	m ³			
9.5.1.1.2	F122	Excavate in natural hard material to form embankment.	m ³			
9.5.1.1.3	F123.1	Excavate in rock material by open blasting to [e.g. form embankment].	m ³			
9.5.1.1.4	F123.2	Excavate in rock material by controlled blasting to [e.g. form embankment].	m ³			
9.5.1.1.5	F123.3	Excavate in rock material by hydraulic rock breaker to [e.g. form embankment].	m ³			
9.5.1.1.6	F123.4	Excavate in rock material by pneumatic tools to [e.g. form embankment].	m ³			
9.5.1.2		<u>Excavate, Load, Haul and Dispose</u>				
		<u>Cut and Dispose</u> Excavation in cut shall be deemed to include trimming and preparation of excavated surface and transportation from source to place of disposal.				
9.5.1.2.1	F131.1	Excavate in earth material to disposal site approved by the S.O./P.D.	m ³			
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BILL NO. 9 - TRAFFIC MANAGEMENT AND CONTROL

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
9.5.1.2.2	F131.2	Excavate in earth material to disposal site approved by the S.O./P.D. [Rate to include compaction at disposal site].	m ³			
9.5.1.2.3	F131.3	Excavate in earth material to disposal site approved by the S.O./P.D outside of boundary - contractor dump site	m ³			
9.5.1.2.4	F132	Excavate in natural hard material by ripper unit to disposal site approved by the S.O./P.D.	m ³			
9.5.1.2.5	F133.1	Excavate in rock by controlled blasting to disposal site approved by the S.O./P.D.	m ³			
9.5.1.2.6	F133.2	Excavate in rock by open blasting to disposal site approved by the S.O./P.D.	m ³			
9.5.1.2.7	F133.3	Excavate in rock material by hydraulic rock breaker to disposal site approved by the S.O./P.D.	m ³			
9.5.1.2.8	F134	Excavate in artificial hard material by hydraulic rock breaker to disposal site approved by the S.O./P.D.	m ³			
9.5.1.2.9	F135	Excavate in unsuitable material and disposed to the Contractor's dumpsite as approved by the S.O./P.D.	m ³			
9.5.1.3		<u>Excavation for Foundation</u> Excavation for foundation shall include upholding sides of excavation, preparation of excavated surface, additional excavation to provide working space and removal of dead services (e.g. culvert, pile embankment).				
9.5.1.3.1	F141	Excavate in earth material commencing from platform level to required depth.	m ³			
9.5.1.3.2	F142	Excavate in natural hard material using ripper unit commencing from platform level to required depth .	m ³			
9.5.1.3.3	F143	Excavate in rock using [e.g. hydraulic rock breaker] commencing from platform level to required depth.	m ³			
9.5.1.3.4	F144	Excavate in artificial hard material commencing from platform level to required depth.	m ³			
9.5.1.3.5	F145	Excavate in unsuitable material to required depth.	m ³			
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BILL NO. 9 - TRAFFIC MANAGEMENT AND CONTROL

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
9.5.1		<u>Earthwork (cont'd)</u>				
9.5.1.4		<u>Excavation by Dredging</u>				
9.5.1.4.1	F161	Provision of plant and equipment for dredging work. Rate to include mobilisation and demobilisation.	sum			
9.5.1.4.2	F162	Excavation by dredging to limits as shown in Drawing. Rate shall include transportation from source to place of disposal and mopping up of silt which accumulates after the Final Surface has been reached.	m ³			
9.5.1.5		<u>Spread, Grade and Compact</u>				
	F300	<u>Filling</u> The following items for filling shall include compaction, testing and confirmation material and additional filling necessitated by settlement or penetration into underlying material as applicable.				
9.5.1.5.1	F310	<u>General</u>				
9.5.1.5.1.1	F311	Using suitable excavated material as per Specification.	m ³			
9.5.1.5.1.2	F312.1	Imported material from Contactor's own source as per Specification.	m ³			
9.5.1.5.1.3	F312.2	Imported material from borrow pit as shown in the drawing as per Specification.	m ³			
9.5.1.5.1.4	F312.3	Imported granular material from contractor own source as per drawings.				
9.5.1.5.1.5	F312.4	Imported sand from contractor own source as per drawings.				
9.5.1.5.1.6	F313	Grade C20 mass concrete.	m ³			
9.5.1.5.2		<u>Embankments</u>				
9.5.1.5.2.1	F321	Using suitable excavated material as per Specification to form embankment. Rate to include formation of benches.	m ³			
9.5.1.5.2.2	F322	Imported material from Contactor's own source as per Specification to form embankment. Rate to include formation of benches.	m ³			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
9.5.1.5.2.3	F324	Other stated material – granular material as per drawings to form drainage layer to embankment.	m ³			
9.5.1.5.2.4	F323	Grade C20 mass concrete.	m ³			
9.5.1.5.3		<u>Replacement</u>				
9.5.1.5.3.1	F331	Replace unsuitable material with suitable excavated material.	m ³			
9.5.1.5.3.2	F332	Replace unsuitable material with imported material from Contactor's own source.	m ³			
9.5.1.5.3.3	F350	Filling to embankment below water level.	m ³			
9.5.1.5.4	F400	<u>Filling Ancillaries</u>				
9.5.1.5.4.1	F410	Supply and lay nonwoven geotextile in according to Drawings.	m ²			
9.5.2		<u>Drainage Works</u>				
	P100	<u>Drain Excavation</u> Drain excavation shall be deemed to include preparation of surfaces, double handling, disposal of surplus excavated material, upholding sides of excavation, allowance for joints, backfilling, and removal of dead services and reinstatement of Original Surface unless covered by separate items.				
9.5.2.1	P111.9	In earth for [...mm] wide earth drain along temporary road, depth not exceeding 1.5 m.	m			
9.5.3		<u>Road and Pavings</u>				
9.5.3.1	Q100	<u>Subgrade Preparation</u>				
9.5.3.1.1	Q110	Earth material to receive road pavement. Rate to include scarifying, levelling, and compaction of the top 300 mm of the subgrade.	m ²			
9.5.3.1.2	Q120	Hard material to receive road pavement. Rate to include scarifying, levelling, and compaction of the top 300 mm of the subgrade.	m ²			
9.5.3.1.3	Q130	Rock material to receive road pavement. Rate to include trimming of protruding rock above Final Surface, filling of all cavities with lean concrete and filling with approved crushed rock or gravel to the Final Surface.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
9.5.3.1.4	Q141	Stabilise subgrade for [...mm] thickness of top layer of subgrade using [...kg] of lime per cubic metre of soil.	m ²			
9.5.3.1.5	Q142	Stabilise subgrade for [...mm] thickness of top layer of subgrade using [...kg] of cement per cubic metre of soil.	m ²			
9.5.3.1.6	Q149	Stabilise subgrade for [...mm] thickness of top layer of subgrade using [...kg] of bituminous material per cubic metre of soil.	m ²			
9.5.3.2	Q200	<u>Sub-Base</u>				
9.5.3.2.1	Q210.1	Geotextile of the woven type as per Specification.	m ²			
9.5.3.2.2	Q210.2	Geotextile of the non woven type as per Specification.	m ²			
9.5.3.2.3	Q220.1	[.....mm] thick granular material with a CBR value of not less than 30%, complying with grading limits of the Specification.	m ²			
9.5.3.3	Q300	<u>Roadbase</u>				
9.5.3.3.1	Q330.1	[.....mm] thick crushed aggregates with a CBR value of not less than 80%, complying with the Specification.	m ²			
9.5.3.3.2	Q390.1	[...mm] thick Wet Mix Roadbase with a CBR value of not less than 80% complying with the Specification.	m ²			
9.5.3.3.3	Q390.2	[...mm] thick Bituminous Roadbase (AC28) complying with the Specification.	m ²			
9.5.3.3.4	Q390.3	[...mm] thick Cement-treated Roadbase complying with the Specification.	m ²			
9.5.3.4	Q500	<u>Surfacing</u>				
9.5.3.4.1	Q540	Bituminous prime coat to be applied at a rate of 0.5 - 1.0 litre per square metre as per Specification.	m ²			
9.5.3.4.2	Q530	Bituminous tack coat to be applied at a rate of 0.25 - 0.55 litre per square metre as per Specification.	m ²			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
9.5.3.4.3		<u>Asphaltic Concrete</u>				
9.5.3.4.3.1	Q561	Binder course (AC28), [...mm] thick as per Specification.	m ²			
9.5.3.4.3.2	Q562.1	Wearing course (AC10), [...mm] thick as per Specification.	m ²			
9.5.3.4.3.3	Q562.2	Wearing course (AC14), [...mm] thick as per Specification.	m ²			
9.5.4		<u>Demolition of temporary works</u>				
		Item for demolition shall be deemed to include disposal of the material arising				
9.5.4.1	E900	Removal of temporary road diversion upon completion of project.	sum			
9.5.4.2	E110.1	Clearance of site upon completion.	ha			
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BILL NO. 9 - TRAFFIC MANAGEMENT AND CONTROL

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		Summary of Bill No. 9 : Traffic Management and Control				
		Page BQ9 - 1/10				
		Page BQ9 - 2/10				
		Page BQ9 - 3/10				
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PROJECT :

BILL NO. 10 - ENVIRONMENT PROTECTION AND ENHANCEMENT

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
10.1		<u>NON - PHYSICAL WORKS</u>				
10.1.1		<u>ENVIRONMENTAL IMPACT ASSESSMENT (EIA)</u>				
10.1.1	B890	Preparation, submission and approval of EIA Report by environmental consultant registered with Department Of Environment (DOE).	sum			
10.1.2	B100	<u>ENVIRONMENTAL MANAGEMENT PLAN (EMP)</u> Preparation of EMP shall be deemed to include the cost of any survey required, literature, references, consultation and the production of the documents. It shall also include the cost for the engagement of registered environmental consultant required for carrying out the preparation of the said report in accordance with DOE Guidelines.				
10.1.2.1	B110	Preparation, submission and approval of EMP by environmental consultant registered with DOE including : (i) Erosion and Sediment Control Plan (ii) Flora Management Plan* (iii) Wildlife Management Plan* (iv) Coral Reef Management Plan* (v) Silt Curtain Maintenance Plan*	sum			
10.1.3		<u>ENVIRONMENTAL OFFICER (E.O.)</u>				
10.1.3.1	B120	Provision of a full time E.O. for environmental management works only, throughout the contract period for the implementation of EIA and/or JKR <i>Sistem Pengurusan Alam Sekitar</i> (SPAS).	man-mth			
10.1.4		<u>ENVIRONMENTAL MONITORING, AUDIT AND TRAINING</u>				
10.1.4.1	B300	<u>WATER QUALITY MONITORING</u>				
10.1.4.1.1		<u>Water Quality Sampling and In situ Testing</u> Water quality testing shall be deemed to include testing by accredited laboratory.				
10.1.4.1.1.1		Conduct monthly river/stream/other waterbody quality monitoring as specified and as shown on drawing for the following parameters or as directed by the S.O. throughout the contract period :-	sum			
	B349.1	1. Turbidity.				
	B341	2. pH.				
	B345	3. Dissolved Oxygen (DO).				
	B349.2	4. Temperature.				
	B349.3	5. Sea surface temperature (for marine related projects).				
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
10.1.4		<u>NON – PHYSICAL WORKS (cont'd)</u>				
		<u>ENVIRONMENTAL MONITORING, AUDIT AND TRAINING (cont'd)</u>				
10.1.4.1.1.2		Conduct in-situ monthly water quality monitoring of the effluent discharge at accommodation, workshop and canteen area as specified for the following parameters or as directed by the S.O./P.D. throughout the contract period :-	sum			
	B349.1	1. Turbidity.				
	B341	2. pH.				
	B345	3. Dissolved Oxygen (DO).				
	B349.2	4. Temperature.				
10.1.4.1.2		<u>Water Quality Sampling and Laboratory Testing</u>				
		Water quality testing shall be deemed to include testing by accredited laboratory.				
10.1.4.1.2.1		Conduct monthly river/stream/other water body quality monitoring as specified and as shown on the drawing for the following parameters or as directed by the S.O./P.D. throughout the contract period :-	sum			
	B352	1. Total suspended solid (TSS).				
	B353	2. Biochemical oxygen demand (BOD).				
	B354	3. Chemical oxygen demand (COD).				
	B356	4. Escherichia coli (E.coli).				
	B357	5. Ammoniacal nitrogen.				
	B358	6. Oil and grease.				
10.1.4.1.2.2		Conduct monthly water quality monitoring of the effluent discharge at accommodation, workshop and canteen area as specified for the following parameters or as directed by the S.O./P.D. throughout the contract period :-	sum			
	B352	1. Total suspended solids (TSS).				
	B353	2. Biochemical oxygen demand (BOD).				
	B354	3. Chemical oxygen demand (COD).				
	B356	4. Escherichia coli (E.coli).				
	B357	5. Ammoniacal nitrogen.				
	B358	6. Oil and grease.				
10.1.4.1.2.3	B390	Conduct monthly water quality monitoring at the discharge outlet of silt trap, sediment pond, sediment basin as specified for Total Suspended Solids (TSS) or as directed by the S.O./P.D. throughout the contract period.	sum			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		<u>NON – PHYSICAL WORKS (cont'd)</u>				
10.1.4		<u>ENVIRONMENTAL MONITORING, AUDIT AND TRAINING (cont'd)</u>				
10.1.4.2	B400	<u>AIR QUALITY CONTROL AND MONITORING</u>				
10.1.4.2.1		<u>Air Quality Sampling</u>				
		Air quality sampling shall be deemed to include testing by accredited laboratory.				
10.1.4.2.1.1	B451	Conduct quarterly air quality monitoring for Total Suspended Particulates (TSP) for 24-hour period including wind velocity and direction as specified or as directed by the S.O./P.D. throughout the contract period.	sum			
10.1.4.3		<u>NOISE AND VIBRATION CONTROL AND MONITORING</u>				
10.1.4.3.1		<u>Noise Level Measurement</u>				
		Noise level shall be deemed to include monitoring by accredited laboratory.				
10.1.4.3.1.1	B539	Conduct quarterly noise monitoring (12 hours average) including Leq, L10 and L90 as specified or as directed by the S.O. /P.D. throughout the contract period.	sum			
10.1.4.3.2		<u>Vibration Measurement</u>				
		Vibration measurement shall be deemed to include monitoring by accredited laboratory.				
10.1.4.3.2.1	B540	Conduct vibration monitoring as specified or as directed by the S.O. /P.D. throughout the contract period.	sum			
10.1.4.4		<u>CORAL REEF HEALTH MONITORING</u>				
10.1.4.4.1	B900.2	Conduct monitoring every four months throughout contract period. Method: Reef Check (20m permanent transect) and 1m x 1m permanent quadrat for seagrass bed (3 quadrat on each 20m transect – start point, middle point and end point. Sites: At least 5 sites. (report to be submitted with photos and video)	sum			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		<u>NON – PHYSICAL WORKS (cont'd)</u>				
10.1.4		<u>ENVIRONMENTAL MONITORING, AUDIT AND TRAINING (cont'd)</u>				
10.1.4.5		<u>ENVIRONMENTAL MONITORING REPORT</u>				
		Preparation of five (5) copies (per month) of the following report throughout the contract period :-				
10.1.4.5.1	B810	Monthly environmental monitoring report.	sum			
10.1.4.6		<u>ENVIRONMENTAL AUDIT</u>				
		This audit where applicable shall be in accordance with DOE requirements.				
10.1.4.6.1	B820	Conduct quarterly 3rd party audit as specified including preparation of five (5) copies of Environmental Audit Report (per audit) throughout the contract period.	sum			
10.1.4.6.2	B830	Conduct an environmental closure audit prior to issuance of certificate of practical completion including preparation of five (5) copies of the report.	nr			
10.1.4.7		<u>TRAINING</u>				
10.1.4.7.1	B900.3	The training shall be in accordance with the latest Government requirement.	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
10.2		<u>PHYSICAL WORKS</u>				
10.2.1		<u>DUST AND MUD CONTROL</u>				
10.2.1.1		<u>Water Bowser Truck</u>				
		Item for water bowser truck shall be deemed to include provision and maintenance of vehicle, water supply and driver.				
10.2.1.1.1	B430	Water bowser truck; for carrying out water spraying along haul/access roads and existing roads, and near settlements, for a minimum of three times per day.	nr			
10.2.1.2		<u>Tyre Washing Facilities</u>				
		Item for tyre washing facilities shall be deemed to include construction of tyre washing concrete platform, and provision and maintenance of water supply system and portable water jets.				
		<u>Portable Water Jet</u>				
10.2.1.2.1	B410	Provision, operation and maintenance of portable water jet including operator, water tank and other necessary equipments as specified to clean vehicle tyres at various exits of the worksites or as directed by the S.O./P.D.	nr			
		<u>Wash Trough</u>				
10.2.1.2.2	B420	Provision, operation and maintenance of wash trough including operator, water tank and other necessary equipment as specified to clean vehicle tyres at various exits of the worksites or as directed by the S.O./P.D.	nr			
10.2.1.3		<u>Water Sprinkler</u>				
		Item for water sprinkler shall be deemed to include provision and maintenance of water sprinkler.				
10.2.1.3.1	B440	Water sprinkler; [e.g.for control of dust at quarry/batching plant using pumping system].	nr			
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Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		<u>PHYSICAL WORKS (cont'd)</u>				
10.2.2		<u>EROSION CONTROL</u>				
10.2.2.1		<u>Natural Control</u>				
		<u>Creepers</u>				
		Planting and maintenance of creepers until fully established as specified or as directed by the S.O./P.D.*				
10.2.2.1.1	B290.1	CentrosemaPubscens.	m ²			
10.2.2.1.2	B290.2	FicusPumila.	m ²			
10.2.2.1.3	B290.3	ParthenocissusHimalayana.	m ²			
10.2.2.1.4	B290.4	..... (any other suitable species).	m ²			
10.2.2.2		<u>Proprietary Products</u>				
		Supply, install and maintain proprietary or any man-made products available in the market to control erosion on slopes subjected to JKR's approval.				
10.2.2.2.1	B290.5	Fibromat.	m ²			
10.2.2.2.2	B290.6	.....(any other suitable products).	m ²			
10.2.3		<u>SEDIMENT CONTROL</u>				
10.2.3.1		<u>Silt Fence</u>				
10.2.3.1.1	B210	Construction of 1.0 m high silt fence including non-woven geotextile and wooden post with dimension as specified and shown in the drawing or as directed by the S.O./P.D.	m			
10.2.3.2		<u>Sand Bags</u>				
10.2.3.2.1	B230	Supply and lay gunny sack (or equivalent) filled with sand as specified and shown in the drawing or as directed by the S.O./P.D.	nr			
10.2.3.3		<u>Silt Trap and Sediment Basin</u>				
		Gabion cage with rock fill and geotextile including excavation, jointing, backfilling and disposal of surplus materials as specified and shown in the drawing or as directed by the S.O./P.D.				
10.2.3.3.1	B240.1	1.0 m x 1.0 m x 1.0 m gabion.	nr			
10.2.3.3.2	B240.2	2.0 m x 1.0 m x 1.0 m gabion.	nr			
10.2.3.3.3	B240.3	2.0 m x 1.0 m x 0.5 m gabion.	nr			
10.2.3.3.4	B240.4	2.0 m x 1.0 m x 0.3 m gabion.	nr			
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BILL NO. 10 - ENVIRONMENT PROTECTION AND ENHANCEMENT

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		<u>PHYSICAL WORK (cont'd)</u>				
10.2.3		<u>SEDIMENT CONTROL (cont'd)</u>				
10.2.3.3.5	B279	Sand bedding for silt traps.	m ³			
10.2.3.3.6	B272	Stone filling at outlet.	m ³			
10.2.3.3.7	B278	300 mm thick mortared rip-rap.	m ³			
10.2.3.3.8	B271	Excavation to form silt trap.	m ³			
10.2.3.4		<u>Gabion Wall</u>				
10.2.3.4.1	B240.5	Construction of 1.0 m x 1.0 m x1.0 m gabion cage with rock fill, sand bed and geotextile including excavation, jointing, backfilling and disposal of surplus materials as specified and shown in the drawing and as directed by the S.O./P.D.	nr			
10.2.3.5		<u>Check Dam</u>				
10.2.3.5.1	B250	Construction of check dam using rocks as specified and as shown in the drawing or as directed by the S.O./P.D.	m ³			
10.2.3.6		<u>Silt Curtain</u>				
10.2.3.6.1	B220	Installation of silt curtain including non-woven geotextile and floats as specified and as shown in the drawing or as directed by the S.O./P.D.	m ²			
10.2.3.7		<u>Maintenance</u>				
		Items for maintenance shall be deemed to include disposal of accumulated debris, sediment and silt to an approved site, unless otherwise stated.				
10.2.3.7.1	B281	Silt fence.	m			
10.2.3.7.2	B283	Sand bags.	nr			
10.2.3.7.3	B287	Silt trap.	sum			
10.2.3.7.4	B286	Sediment basin.	sum			
10.2.3.7.5	B284	Gabion wall.	nr			
10.2.3.7.6	B285	Check dam.	nr			
10.2.3.7.7	B282	Silt curtain.	m ²			
		Page Total carried to Summary of Bill No. 10				

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PROJECT :

BILL NO. 10 - ENVIRONMENT PROTECTION AND ENHANCEMENT

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		<u>PHYSICAL WORK (cont'd)</u>				
10.2.4		<u>TOPSOIL PROTECTION</u>				
10.2.4.1	B290.7	Provision and maintenance of plastic sheeting to immediately cover topsoil stockpile for turfing and landscaping.	m ²			
10.2.4.2	B210	Construction of 1.0 m high silt fence including non-woven geotextile and wooden post with dimension as specified and shown in the drawing or as directed by the S.O./P.D.	m			
10.2.5		<u>FUEL SPILLAGE MANAGEMENT</u>				
10.2.5.1		<u>Containment Bund for Bulk Fuel Tank</u>				
		Item for skid tank bund shall be deemed to include traps , oil and grease separators, and its maintenance and removal upon completion.				
10.2.5.1.1	B310	Construct impervious concrete base as per drawing to contain 110% volume of stored fuel including grease trap.	sum			
10.2.6		<u>WASTE MANAGEMENT</u>				
		Item for scheduled waste shall be deemed to include storage, labelling and transportation from site by a licensed contractor for disposal as per Department of Environment (DOE) Regulation.				
10.2.6.1	B610	Scheduled Wastes Disposal.	sum			
		<u>Grease Trap</u>				
10.2.6.2	B690	Provision and maintenance of grease traps at kitchen areas, and workshop.	nr			
10.2.7		<u>MANAGEMENT OF DISPOSAL SITE FOR SURPLUS MATERIALS</u>				
10.2.7.1		<u>Earthworks</u>				
10.2.7.1.1		<u>Protective Vegetation for Erosion Control</u>				
		Plant and maintain until fully established as specified or as directed by the S.O./P.D.				
10.2.7.1.1.1	F510	Closed turfing.	m ²			
10.2.7.1.1.2	F520	Hydroseeding with fibromat or equivalent.	m ²			
10.2.7.1.1.3	F590.1	Vertiver Z.	m ²			
10.2.7.1.1.4	F590.2	Creepers.	m ²			
		Page Total carried to Summary of Bill No. 10				

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PROJECT :

BILL NO. 10 - ENVIRONMENT PROTECTION AND ENHANCEMENT

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		<u>PHYSICAL WORK (cont'd)</u>				
10.2.7		<u>MANAGEMENT OF DISPOSAL SITE FOR SURPLUS MATERIALS (cont'd)</u>				
10.2.7.2		<u>Drainage</u>				
10.2.7.2.1		<u>Embankment Sump Outlet</u>				
		Reinforced concrete class 25/20 embankment sump outlet including excavation, concrete, reinforcement, leveling, blinding, formworks, RCP, backfilling and all incidentals necessary as shown in drawings or as directed by the S.O./P.D.				
10.2.7.2.1.1	P720.2	Sump Type S3 internal size 400 mm x 600 mm x 700 mm depth.	nr			
10.2.7.2.2		<u>Drains</u>				
		Reinforced in situ concrete class 25/20 in drains at any inclination including excavation, junction, reinforcement, formworks where necessary, joints, stepping, backfilling and disposal of surplus materials and all incidental necessary as specified and as shown in the drawings or as directed by the S.O./P.D.				
10.2.7.2.2.1	P250.5	Toe Drain Along Toe of Embankment - 450 mm invert width, 450 mm deep - 600 mm invert width, 600 mm deep	m			
10.2.7.2.2.2	P220.3	Berm Drain Along Berm of Embankment - 400 mm deep	m			
10.2.7.2.2.3	P290.2	Embankment Shoulder Block Drain -300 mm half round concrete drain	m			
10.2.7.2.2.4	P290.3	Slope Drain Down Embankment Slope (Spillway) - 600 mm invert width, 500 mm deep	m			
		Page Total carried to Summary of Bill No. 10				

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PROJECT :

BILL NO. 10 - ENVIRONMENT PROTECTION AND ENHANCEMENT

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		<u>PHYSICAL WORK (cont'd)</u>				
10.2.7		<u>MANAGEMENT OF DISPOSAL SITE FOR SURPLUS MATERIALS (cont'd)</u>				
10.2.7.3		<u>Gabion Retaining Wall</u>				
		Construction and maintenance of gabion retaining wall inclusive of geotextile filter and sand drainage blanket and necessary works as specified and as shown in Drawings or as directed by S.O./P.D.				
10.2.7.3.1	B240.2	2.0 m x 1.0 m x 1.0 m gabion.	nr			
10.2.7.3.2	B240.3	2.0 m x 1.0 m x 0.5 m gabion.	nr			
10.2.7.3.3	B240.4	2.0 m x 1.0 m x 0.3 m gabion.	nr			
10.2.8		<u>FLORA MANAGEMENT*</u>				
10.2.8.1	B711	Conduct and prepare five (5) copies of Flora Survey Report as specified by Jabatan Perhutanan or other relevant authorities.	sum			
10.2.8.2	B719	Preparation, submission and approval of Flora Management Plan as specified by Jabatan Perhutanan or other relevant authorities.	sum			
10.2.8.3	B712	Relocate, transport and maintain of specified flora at specified location as directed by Jabatan Perhutanan or other relevant authorities.	sum			
10.2.9		<u>WILDLIFE MANAGEMENT*</u>				
10.2.9.1	B721	Conduct and prepare five (5) copies of Fauna Survey Report as specified by Jabatan Perlindungan Hidupan Liar dan Taman Negara (PERHILITAN) or other relevant authorities.	sum			
10.2.9.2	B729	Preparation, submission and approval of Wildlife Management Plan as specified by Jabatan Perlindungan Hidupan Liar dan Taman Negara (PERHILITAN) or other relevant authorities.	sum			
10.2.9.3	B722	Relocation of wildlife at specified location as directed by the Jabatan Perlindungan Hidupan Liar dan Taman Negara (PERHILITAN) or other relevant authorities.	sum			
		Page Total carried to Summary of Bill No. 10				

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PROJECT :

BILL NO. 10 - ENVIRONMENT PROTECTION AND ENHANCEMENT

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		<u>PHYSICAL WORK (cont'd)</u>				
10.2.10		<u>CORAL AND MARINE ECOSYSTEM</u>				
10.2.10.1	B790.1	Conduct and prepare five (5) copies of Coral and Marine Ecosystem survey report as specified by Jabatan Taman Laut or other relevant authorities.	sum			
10.2.10.3	B790.2	Preparation, submission and approval of Coral and Marine Ecosystem Management Plan as specified by Jabatan Taman Laut or other relevant authorities.	sum			
10.2.10.4	B790.3	Relocation of coral and immotile marine organisms at an approved location as directed by Jabatan Taman Laut or other relevant authorities.	sum			
		Page Total carried to Summary of Bill No. 10				

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PROJECT :

BILL NO. 10 - ENVIRONMENT PROTECTION AND ENHANCEMENT

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		Summary of Bill No. 10 : Environment Protection And Enhancement				
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		Page BQ10 - 9/12				
		Page BQ10 - 10/12				
		Page BQ10 - 11/12				
		Total of Bill No. 10 carried to Grand Summary				

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PROJECT :

BILL NO. 11 - ROUTINE MAINTENANCE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
11.1		<u>ROUTINE MAINTENANCE WORKS DURING CONSTRUCTION PERIOD</u>				
11.1.1	A341	<u>Maintain The Existing Road</u> Provision of all labour, equipments, tools material, transport and whatever necessary to all the works stated below as per standard JKR road specification :				
11.1.1.1	A341.1	<u>To Repair Pavement Surface</u> The works shall comprise of : a) Patching of potholes b) Sealing of surface cracks c) Reinststate edge deterioration of back filled trenches d) Treatment to stripping of aggregate e) Treatment for rutting f) Treatment to deterioration of concrete pavement surface g) Repair to concrete pavement joints h) Repair to paving blocks and slabs	km mth km mth km mth km mth km mth km mth km mth km mth			
11.1.1.2	A341.2	<u>Maintain The Road Shoulder</u> The works shall comprise of : a) Re-grading and clearing of vegetation b) Topping up of shoulder with suitable filling material c) Filling irregularities in unsealed shoulders d) Filling pavement/shoulder level differences	km mth km mth km mth km mth			
11.1.2	A341.3	<u>Grass Cutting</u> The works shall comprise grass cutting, disposal of cut grass and debris. The frequency of grass cutting shall be carried out once a month : a) Road shoulder b) Slope area c) Berm drain, interceptor drain and all other types of drain on slopes d) Median	mth mth mth mth			
11.1.3	A341.4	<u>Road Furnitures</u>				
11.1.3.1		The works shall comprise of cleaning works and shall be carried out 4 cycles/year of cleaning of : a) Guardrails and barriers b) Signages and posts c) Kilometer post and delineator post d) Traffic signal aspects.	cycle cycle cycle cycle			
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PROJECT :

BILL NO. 11 - ROUTINE MAINTENANCE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
11.1.3.2		The works shall comprise of repainting works and shall be carried out 2 years/cycle of repainting of: a) Barriers b) Signages and traffic signal posts c) Kilometer post and delineator post d) Road kerbs.	cycle cycle cycle cycle			
11.1.4	A341.5	<u>Bridges and Culverts</u> Provision of all labour, equipments, tools material, transport and whatever necessary to all the works stated below as per standard JKR road specifications :				
11.1.4.1		The works shall comprise of cleaning works and shall be carried out 4 cycles/year of cleaning of : a) Expansion joints b) Weep holes c) Parapets d) Bearing shelves e) Grafiti and markings f) Waterway or culvert opening and bridge carriageway g) Removal of vegetation and lubricating and greasing operation for steel bearings e) Water down pipe	cycle cycle cycle cycle cycle cycle cycle cycle			
11.1.4.2		The works shall comprise of repainting works and shall be carried out 1 year/cycle of repainting of : a) Concrete parapets/railings b) Steel railings	cycle cycle			
11.1.5	A341.6	<u>Roadline Marking</u> The works shall comprise of repainting roadline marking when faded.	m ²			
11.1.6	A341.7	<u>Drainage</u>				
11.1.6.1		The works shall comprise of cleaning debris and desilting works and shall be carried out 4 cycles/year of debris in : a) Lined drains b) Unlined drains c) Sump d) Culverts	cycle cycle cycle cycle			
11.1.6.2		The works shall comprise of minor repair to : a) Damaged drains b) Damaged sumps c) Misaligned unlined drains d) Mis-seated covers e) Damaged covers	m nr m nr nr			
		Page Total carried to Summary of Bill No. 11				

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PROJECT :

BILL NO. 11 - ROUTINE MAINTENANCE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
11.1.7	A341.8	<p><u>Landscaping</u></p> <p>Items for maintaining all landscaping shall be deemed to include digging, planting media, bedding, staking, protection, watering, weeding, required fertilising, and replacement of dead item until the vegetation is established.</p> <p>The works shall comprise of :</p> <p>a) Watering at every alternate day</p> <p>b) Cutting and trimming and shall be carried out once a month</p> <p>c) Weeding, fertilising, insect pest and disease control, pruning and mulching shall be carried out once a month</p>	km mth km mth km mth			
11.1.8	A341.9	<p><u>Litter Collection and Disposal of Minor Obstruction/Debris</u></p> <p>Provision of all labour, equipments, tools material, transport and whatever necessary to all the works stated below :</p> <p>Litter collection and disposal, removal and disposal of loose material and debris, carcass as and when required.</p>	sum			
11.1.9	A343	<p><u>Maintain The Temporary Road Diversion</u></p> <p>Provision of all labour, equipments, tools material, transport and whatever necessary to all the works stated below as per standard JKR road specification :</p>				
11.1.9.1	A343.1	<p><u>To Repair Pavement Surface</u></p> <p>The works shall comprise of :</p> <p>a) Patching of potholes</p> <p>b) Sealing of surface cracks</p> <p>c) Reinstate edge deterioration of back filled trenches</p> <p>d) Treatment to stripping of aggregate</p> <p>e) Treatment for rutting</p> <p>f) Treatment to deterioration of concrete pavement surface</p> <p>g) Repair to concrete pavement joints</p> <p>h) Repair to paving blocks and slabs</p>	km mth km mth km mth km mth km mth km mth km mth km mth			
		Page Total carried to Summary of Bill No. 11				

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PROJECT :

BILL NO. 11 - ROUTINE MAINTENANCE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
11.1.9.2	A343.2	<u>Maintain The Road Shoulder</u> The works shall comprise of : a) Re-grading and clearing of vegetation b) Topping up of shoulder with suitable filling material c) Filling irregularities in unsealed shoulders d) Filling pavement/shoulder level differences	km mth km mth km mth km mth			
11.1.9.3	A343.3	<u>Grass Cutting</u> The works shall comprise grass cutting, disposal of cut grass and debris. The frequency of grass cutting shall be carried out once a month: a) Road shoulder b) Slope area c) Berm drain, interceptor drain and all other types of drain on slopes d) Median	mth mth mth mth			
11.1.9.4	A343.4	<u>Road Furnitures</u>				
11.1.9.4.1		The works shall comprise of cleaning works and shall be carried out 4 cycles/year of cleaning of : a) Guardrails and barriers b) Signages and posts c) Kilometer post and delineator post d) Traffic signal aspects.	cycle cycle cycle cycle			
11.1.9.4.2		The works shall comprise of repainting works and shall be carried out 2 years/cycle of repainting of : a) Barriers b) Signages and traffic signal posts c) Kilometer post and delineator post d) Road kerbs.	cycle cycle cycle cycle			
11.1.9.5	A343.5	<u>Bridges and Culverts</u> Provision of all labour, equipments, tools material, transport and whatever necessary to all the works stated below as per standard JKR road specification :				
11.1.9.5.1		The works shall comprise of cleaning works and shall be carried out 4 cycles/year of cleaning of : a) Expansion joints b) Weep holes c) Parapets d) Bearing shelves e) Graffiti and markings f) Waterway or culvert opening and bridge carriageway g) Removal of vegetation and lubricating and greasing operation for steel bearings h) Water down pipe	cycle cycle cycle cycle cycle cycle cycle cycle			
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PROJECT :

BILL NO. 11 - ROUTINE MAINTENANCE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
11.1.9.5.2		The works shall comprise of repainting works and shall be carried out 1 year/cycle of repainting of : a) Concrete parapets/railings b) Steel railings	cycle cycle			
11.1.9.6	A343.6	<u>Roadline Marking</u> The works shall comprise of repainting roadline marking when faded.	m ²			
11.1.9.7	A343.7	<u>Drainage</u>				
11.1.9.7.1		The works shall comprise of cleaning debris and desilting works and shall be carried out 4 cycles/year of debris in : a) Lined drains b) Unlined drains c) Sump d) Culverts	cycle cycle cycle cycle			
11.1.9.7.2		The works shall comprise of minor repair to : a) Damaged drains b) Damaged sumps c) Misaligned unlined drains d) Mis-seated covers e) Damaged covers	m nr m nr nr			
11.1.9.8	A343.8	<u>Landscaping</u> Items for maintaining all landscaping shall be deemed to include digging, planting media, bedding, staking, protection, watering, weeding, required fertilising, and replacement of dead item until the vegetation is established.				
11.1.9.8.1		The works shall comprise of : a) Watering at every alternate day b) Cutting and trimming and shall be carried out once a month c) Weeding, fertilising, insect pest and disease control, pruning and mulching shall be carried out once a month	km mth km mth km mth			
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PROJECT :

BILL NO. 11 - ROUTINE MAINTENANCE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
11.2		<u>ROUTINE MAINTENANCE WORKS DURING DEFECT LIABILITY/MAINTENANCE PERIOD*</u>				
	A349	<u>Maintain The Existing Road</u> Provision of all labour, equipments, tools material, transport and whatever necessary to all the works stated below as per standard JKR road specification :				
11.2.1	A349.1	<u>Grass Cutting</u> The works shall comprise grass cutting, disposal of cut grass and debris. The frequency of grass cutting shall be carried out once a month:				
		a) Road shoulder	nth			
		b) Slope area	nth			
		c) Berm drain, interceptor drain and all other types of drain on slopes	nth			
		d) Median	nth			
11.2.2	A349.2	<u>Road Furnitures</u>				
11.2.2.1		The works shall comprise of cleaning works and shall be carried out 4 cycles/year of cleaning of :				
		a) Guardrails and barriers	cycle			
		b) Signages and posts	cycle			
		c) Kilometer post and delineator post	cycle			
		d) Traffic signal aspects.	cycle			
11.2.2.2		The works shall comprise of repainting works and shall be carried out 2 years/cycle of repainting of :				
		a) Barriers	cycle			
		b) Signages and traffic signal posts	cycle			
		c) Kilometer post and delineator post	cycle			
		d) Road kerbs.	cycle			
11.2.3	A349.3	<u>Bridges and Culverts</u> Provision of all labour, equipments, tools material, transport and whatever necessary to all the works stated below as per standard JKR road specification :				
11.2.3.1		The works shall comprise of cleaning works and shall be carried out 4 cycles/year of cleaning of :				
		a) Expansion joints	cycle			
		b) Weep holes	cycle			
		c) Parapets	cycle			
		d) Bearing shelves	cycle			
		e) Graffiti and markings	cycle			
		f) Waterway or culvert opening and bridge carriageway	cycle			
		g) Removal of vegetation and lubricating and greasing operation for steel bearings	cycle			
		h) Water down pipe	cycle			
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PROJECT :

BILL NO. 11 - ROUTINE MAINTENANCE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
11.2.3.2		The works shall comprise of repainting works and shall be carried out 1 year/cycle of repainting of : a) Concrete parapets/railings b) Steel railings	cycle cycle			
11.2.4	A349.4	<u>Roadline Marking</u> The works shall comprise of repainting roadline marking when faded.	m ²			
11.2.5	A349.5	<u>Drainage</u>				
11.2.5.1		The works shall comprise of cleaning debris and desilting works and shall be carried out 4 cycles/year of debris in : a) Lined drains b) Unlined drains c) Sump d) Culverts	cycle cycle cycle cycle			
11.2.5.2		The works shall comprise of minor repair to : a) Damaged drains b) Damaged sumps c) Misaligned unlined drains d) Mis-seated covers e) Damaged covers	m nr m nr nr			
11.2.6	A349.6	<u>Landscaping</u> Items for maintaining all landscaping shall be deemed to include digging, planting media, bedding, staking, protection, watering, weeding, required fertilising, and replacement of dead item until the vegetation is established.				
11.2.6.1		The works shall comprise of : a) Watering at every alternate day b) Cutting and trimming and shall be carried out once a month c) Weeding, fertilising, insect pest and disease control, pruning and mulching shall be carried out once a month	km mth km mth km mth			
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PROJECT :

BILL NO. 11 - ROUTINE MAINTENANCE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
11.2.7	A349.7	<u>Litter Collection and Disposal of Minor Obstruction/Debris</u> Provision of all labour, equipments, tools material, transport and whatever necessary to all the works stated below :				
11.2.7.1		Litter collection and disposal, removal and disposal of loose material and debris, carcass as and when required.	sum			
11.3		<u>MAINTENANCE ACTIVITIES DURING CONSTRUCTION PERIOD</u>				
11.3.1	A349.8	Maintenance Of Existing Road Lighting Within Project Site The Contractor shall ensure the road within the project site to be lighted up sufficiently according to the local authority requirement and maintained in good working conditon through out construction period including replacing all faulty and missing components, and removal from site upon completion of the road works / handovers to local authority as instructed by the S.O.	sum			
11.3.2	A349.9	Maintenance of Existing Traffic Signal Light Within Project Site The Contractor shall maintain the existing Traffic Signal Light System in good working condition through out construction period including replacing all faulty and missing component, and removal from site upon completion of the road works / handovers to local authority as instructed by the S.O.	sum			
11.3.3	A349.10	Maintenance of Existing High Mast Within Project Site The Contractor shall maintain the existing high mast lighting system in good working condition throughout the contract period including replacing all existing faulty and missing component. <i>Note : The Contractor is required to refer to local maintenance team (KJEN,JKR/PBT) prior to dismantling/relocation of existing asset or termination/disconnection of utility supply for proper coordination works.</i>	sum			
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PROJECT :

BILL NO. 11 - ROUTINE MAINTENANCE WORKS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		Summary of Bill No. 11 : Routine Maintenance Works				
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PROJECT :

BILL NO. 12 - OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT (FOR PROJECT ABOVE RM20M)

Item No	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
12.1		<u>PLANNING FOR SAFETY & HEALTH</u>				
12.1.1	A411.1	Preparation of five (5) copies site safety and health plan (S-Plan) as per JKR requirement and it shall include among others: i. Safety and Health Policy. ii. Emergency Response Plan (ERP). iii. Chemical Safety Data Sheets (CSDS). (Shall submit within Three (3) months after the receipt of Letter of Acceptance).	sum			
12.1.2	A411.2	Preparation of Hazard Identification Risk Assessment and Risk Control (HIRARC) for the activities carried out at site. (To be sequent submitted before commencement of each works throughout the contract period).	sum			
12.1.3	A414	Prepare and submit to the S.O/P.D of five (5) copies monthly safety & health report describing the occurrences of accidents, near misses, injuries and deaths and the actions taken. The report may be incorporated in the Progress Report for the entire duration of the contract. It shall also include:- i. Schedule of safety & health committee meetings. ii. Site safety & health toolbox meetings. iii. Safety & health audit reports. iv. Safety & health inspections reports.	nth			
12.2		<u>RESOURCES FOR SITE SAFETY</u>				
12.2.1	A412.1	Employment of a Site Safety & Health Officer (SHO) registered with DOSH and to the satisfaction of the S.O/P.D/DOSH for the entire contract period to the stationed fulltime at the site. (For works exceeding RM20 millions contract value or high risk workplace as directed by S.O/P.D/DOSH).	man-mth			
12.2.2	A412.2	Employment of a Site Safety & Health Supervisor (SSS) and to the satisfaction of the S.O/P.D for the entire duration of the construction period to be stationed minimum 15 hours a week at the site.	man-mth			
		Page Total carried to Summary of Bill No. 12				

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PROJECT :

BILL NO. 12 - OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT (FOR PROJECT ABOVE RM20M)

Item No	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
12.3		<u>PROTECTIVE EQUIPMENT</u>				
12.3.1	A413	Provision and maintenance of Personal Protective Equipment to S.O/P.D staffs at Site of adequate quantity and of approved quality. The equipment shall include but not be limited to the following:				
12.3.1.1	A413.1	Safety boots.	pairs			
12.3.1.2	A413.2	Safety helmets.	pcs			
12.3.1.3	A413.3	Full Body Harness c/w Hook and Lankyard for workmen who work at heights more than 2m above ground level.	pcs			
12.3.1.4	A413.4	Safety / life lines for workmen who work at heights more than 2m above ground level.	m run			
12.3.1.5	A413.5	Protective gloves.	pairs			
12.3.1.6	A413.6	Safety goggles.	pairs			
12.3.1.7	A413.7	Safety jackets of reflective type.	pcs			
12.3.1.8	A413.8	Ear plugs and muffs.	pairs			
12.3.1.9	A413.9	Gas masks.	set			
12.3.1.10	A413.10	Dust musks.	pcs			
12.3.1.11	A413.11	Head lamp.	pcs			
12.3.1.12	A413.12	Life jackets.	pcs			
12.3.1.13	A413.13	<u>(any additional.....etc)</u>				
12.3.2		Provision and maintenance on the site during the duration of the works, of the adequate safety equipment to be approved by the S.O/P.D as follows:				
12.3.2.1	A413.14	Gas detectors.	nos			
12.3.2.2	A413.15	Breathing apparatus.	pcs			
12.3.2.3	A413.16	Air ventilation pumps.	pcs			
12.3.2.4	A413.17	Warning lights.	pcs			
12.3.2.5	A413.18	Fire extinguishers.	pcs			
12.3.2.6	A413.19	Hazard tape.	roll			
12.3.2.7	A413.20	Safety barriers.	pcs			
		Page Total carried to Summary of Bill No. 12				

* Delete where not applicable

** Designer to decide which is applicable

PROJECT :

BILL NO. 12 - OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT (FOR PROJECT ABOVE RM20M)

Item No	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
12.4		<u>TRAFFIC MANAGEMENT & SIGNAGE</u> (Please delete this item if Traffic Management Plan is existed in the contract already).				
12.4.1	A419.1	Provision and maintenance of adequate safety, traffic and warning signs and warning lights as stipulated in JKR Specification For Occupational Safety And Health For Engineering Construction Works.	item			
12.4.2	A419.2	Provision and maintenance of traffic control and signage by competent persons where site is in close proximity of public road including provision of flagmen as stipulated in JKR Specification For Occupational Safety And Health For Engineering Construction Works.	item			
12.5		<u>SAFE WORKING AREA</u>				
12.5.1	A419.3	Supply, erection, maintenance and removal on completion of the works, protective and security hoarding as stipulated in JKR Specification For Occupational Safety And Health For Engineering Construction Works.	LS			
12.5.2	A419.6	Supply, erection, maintains and dismantling of catch platform during demolition of structure or other related exterior works at more than 12m height. Such platform shall be designed by a Professional Engineer and certified for safety prior to erection as stipulated in JKR Specification For Occupational Safety And Health For Engineering Construction Works.*	LS			
12.5.3	A419.7	Supply, erection, maintenance and removal of safety barricades / fencing / railing / screen / wire netting / toe board for maintaining safe working environment.*	LS			
12.5.4	A419.8	Provision and maintenance of guardrails or board fences and temporary foot walks with adequate temporary overhead protection for public walkways and thoroughfares.*	LS			
12.5.5	A419.9	Condoning off working area and provision of public control and safety measures where lifting operations, moving, shifting, transferring works and carried out outside the hoarded up area of the worksite as stipulated in JKR Specification For Occupational Safety And Health For Engineering Construction Works.	LS			
12.5.6	A419.10	Measures to prevent the breeding of mosquitoes, houseflies, rats, insects and other dangerous animals on the site throughout contract period.	LS			
Page Total carried to Summary of Bill No. 12						

* Delete where not applicable

** Designer to decide which is applicable

PROJECT :

BILL NO. 12 - OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT (FOR PROJECT ABOVE RM20M)

Item No	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
12.6		<u>SPECIAL WORK CONDITION</u>				
12.6.1		Allow for Statutory Obligation including payment of all fees and charges compliance with Occupational Safety and Health requirements stated in laws, regulations and by-laws which are not included elsewhere in this Bills of Quantities as stipulated under the Condition of Contract and JKR Specification For Occupational Safety And Health For Engineering Construction Works , details of which are to be particularized below:-				
	A420	The Contractor shall ensure that closed tanks with restricted means of entry and exit, open manholes, trenches, pipes, flues, ducts, ceiling voids, enclosed rooms such as basements and other places where there is inadequate ventilation and/or the air is either contaminated or oxygen deficient, be tested before entry to determine that there are adequate levels of oxygen present, and that dangerous amounts of flammable and or poisonous gases are not present. (Proprietary meters are available). The Contractor shall establish a safe work system for workers who will be carrying out their work in confined spaces. The Contractor shall adopt an entry permit system, so as to ensure that employees and others are aware of the location of anyone required to enter confined spaces.	LS			
		Page Total carried to Summary of Bill No. 12				

* Delete where not applicable

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PROJECT :

BILL NO. 12 - OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT (FOR PROJECT ABOVE RM20M)

Item No	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		Summary of Bill No. 12 : Occupational Safety & Health Management (For Project Above RM 20M)				
		Page BQ12 - 1/5				
		Page BQ12 - 2/5				
		Page BQ12 - 3/5				
		Page BQ12 - 4/5				
		Total of Bill No.12 carried to Grand Summary				

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** Designer to decide which is applicable

PROJECT :

BILL NO. 13 - PROVISIONAL/PRIME COST SUMS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
	A700	<u>PROVISIONAL/PRIME COST SUMS</u>				
13.1	A710	<u>PROVISIONAL SUMS</u>				
13.1.1		<u>Landscaping</u>				
13.1.1.1	A711.1	Landscaping Works.	sum			
13.1.1.2	A713.1	Profit%	sum			
13.1.1.3	A712.1	Attendance.	sum			
13.1.2		<u>Relocation and Protection of Utility Services</u>				
13.1.2.1	A711.2	TNB	sum			
13.1.2.2	A711.3	Telecommunication	sum			
13.1.2.3	A711.4	Waterworks	sum			
13.1.2.4	A711.5	Gas Supply	sum			
13.1.2.5	A711.6	Sewerage	sum			
13.1.2.6	A711.7	Others:	sum			
13.1.3		<u>KTMB</u>				
13.1.3.1	A711.8	KTMB Requirement and Inconvenience charges.	sum			
13.1.4		<u>Additional Testing of Materials and Works</u>				
13.1.4.1	A711.9	Additional testing of materials and works.	sum			
13.1.5		<u>Additional S.I. Works</u>				
13.1.5.1	A711.10	Additional Soil Investigation works during construction.	sum			
13.1.6		<u>Additional Utility Detection and Mapping</u>				
13.1.6.1	A711.11	Additional utility detection and mapping during construction.	sum			
13.1.7		<u>Aerial Inspection</u>				
13.1.7.1	A711.12	Carry out aerial inspection of the project site.	sum			
13.1.8		<u>Additional Land Survey</u>				
13.1.8.1	A711.13	Additional land survey during construction].	sum			
		Page Total carried to Summary of Bill No. 13				

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** Designer to decide which is applicable

PROJECT :

BILL NO. 13 - PROVISIONAL/PRIME COST SUMS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
13.1.9		<u>Road Safety Audit Stage 4</u>				
13.1.9.1	A711.15	Road Safety Audit Stage 4 by an independent accredited auditor to be nominated by S.O.	sum			
13.1.10		<u>Additional Pavement Evaluation</u>				
13.1.10.1	A711.16	Additional pavement evaluation during construction.	sum			
13.1.11		<u>Bus-Shelter</u>				
13.1.11.1	A711.17	Bus-shelter inclusive of roofing, RC foundation, seating, railing, lighting etc as shown in the drawing.	sum			
13.2	A720	<u>PRIME COST ITEMS</u>				
13.2.1		<u>Road Lighting and Traffic Signal Lights</u>				
13.2.1.1	A721.1	Road lighting and traffic signal lights.	sum			
13.2.1.2	A723.1	Profit%	sum			
13.2.1.3	A722.1	Attendance.	sum			
		Page Total carried to Summary of Bill No. 13				

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PROJECT :

BILL NO. 13 - PROVISIONAL/PRIME COST SUMS

Item No.	Code No.	Description	Unit	Qty.	Rate (RM)	Amount (RM)
		Summary of Bill No. 13 : Provisional/Prime Cost Sums				
		Page BQ13 - 1/3				
		Page BQ13 - 2/3				
		Total of Bill No.13 carried to Grand Summary				

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