

JABATAN KERJA RAYA MALAYSIA

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI  
ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN LOKAP AADK  
NEGERI PULAU PINANG**

**SENARAI KUANTITI**

Kami seperti nama syarikat di bawah mengesahkan tawaran harga yang tersenarai di dalam senarai kuantiti ini adalah sama sepertimana di dalam Borang Tender yang dihasilkan di dalam sistem dan sebarang percanggahan akan menyebabkan tawaran kami ditolak.

- A. Nama Syarikat: **Nama Petender**
- B. CIDB/UPKJ/PUKONSA No.: **No.Pendaftaran Petender**
- C. Harga Tawaran: **Harga Tawaran Petender**
- D. No. Siri Tender: **JKR/CKE/22199/2024**
- E. Tarikh Cipta Senarai Kuantiti: **13/11/2024**

Senarai kuantiti ini dikeluarkan oleh CKE. Sebarang pertanyaan boleh berhubung dengan pegawai yang menyediakan tender dan maklumat pegawai untuk dihubungi boleh didapati di laman iklan.

# **JABATAN KERJA RAYA MALAYSIA**

## **PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN LOKAP AADK NEGERI PULAU PINANG**

### **SENARAI KUANTITI**

No. Tender: JKR/CKE/22199/2024

**RINGKASAN TENDER****PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH  
KEBANGSAAN SEBERANG PERAI SELATAN DAN LOKAP AADK NEGERI PULAU PINANG**

ITEM	DESCRIPTION	PAGE NO.	AMOUNT(RM)
A	PRELIMINARIES		
B	BLOK PENTADBIRAN		
C	BLOK SOKONGAN		
D	MAIN SWITCHBOARD, SUB SWITCHBOARD & POWER FACTOR CORRECTION BOARD		
E	STANDBY GENERATOR SET		
F	UNDERGROUND CABLE, EXTERNAL ELECTRICAL INFRASTRUCTURE		
G	LIGHTNING PROTECTION SYSTEM		
H	EXTERNAL LIGHTING		
I	PUBLIC ADDRESS SYSTEM		
J	CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM		
K	ELECTRONIC ACCESS CONTROL SYSTEM		
L	VISUAL SYSTEM		
M	VISUAL SYSTEM & SOUND REINFORCEMENT SYSTEM		
N	PASSIVE INFRASTRUCTURE		
O	ACTIVE INFRASTRUCTURE		
P	TELEPHONE SYSTEM		
Q	EARTHING SYSTEM		
R	TESTING & COMMISSIONING		
S	OTHERS		
T	MISCELLANEOUS		
Jumlah di bawa ke Borang Tender			-

Sila pilih muka surat

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN  
LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**A) PRELIMINARIES**

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUN (RM)
<b>A</b>	<p><b>PART I - GENERAL INFORMATION</b></p> <p><b>Notes:</b> The amounts inserted by the Nominated Sub-Contractor for such Preliminary Items shall be deemed to apply to the whole of the Works carried out under this Sub-Contract.</p> <p>Each Preliminary Item or Clause shall be individually priced. Bulk pricing for sections, trades, groups or pages of Preliminary Items or Clauses shall not be accepted and no subsequent claims for loss or expenses and/or profit shall be entertained for failure to comply with this .</p> <p>Where any Preliminary Item or Clause is left unpriced, it shall be deemed that the cost of such Preliminary Items or Clauses have been allowed for elsewhere within these Sub-Contract Document. No subsequent claims arising out of expenses and/or loss incurred against such unprices Preliminary Item or Clauses shall be entertained.</p> <p>Notwithstanding the above clauses, the S.O. reserves the right to request from the Contractor the detailed breakdown of the pricing for Preliminary Items or Clauses or the rates in the Bill of Quantities for examination and approval. The approved detailed breakdown pricing shall then be used as a basis for the administration of the Sub-Contract.</p> <p>Headings are not comprehensive and do not necessarily reflect or modify the meaning of the items in the B.Q. The exact nature and extent of the work to be carried out shall be ascertained by reference to the Contract as a whole, in particular the Conditions of Contract, the Specification and the Drawings.</p> <p>Where Preliminary Items or Clauses or items in the Bill of Quantities are priced but have not been executed on site by the Contractor, the cost of such priced items or clauses or items in the Bill of Quantities shall accordingly be deducted from the Contract Sum when so instructed by the S.O.</p>				
<b>1.0</b>	<b><u>Pricing of Bill of Quantities</u></b>				
<b>1.1</b>	The sum of the amounts of all items of the Bill of Quantities priced by the tenderer shall truly represent the amount shown in his tender. The rates set down by the Tenderer against each item in the Bill of Quantities shall be the full inclusive rates and prices for the finished work (unless expressly provided to the contrary) and shall be held to include providing and delivering all materials, unloading, cutting and waste on materials, storage, packing, carriage and cartage, hoisting, all labour, setting, fitting and fixing in position, use of plant, providing suspension, establishment charges, profit and all other labour and everything else necessary for the due and proper completion of each .				
<b>1.0</b>	<b><u>Pricing of Bill of Quantities (cont'd)</u></b>				
<b>1.2</b>	Where the tenderer leaves any item blank in the preliminaries or insert only a dash against any item in these Bill of Quantities the value thereof shall be deemed to be included in the prices or rates of other items therein.				
<b>1.3</b>	No unauthorised alteration, addition or note entered in these Bill of Quantities shall modify the printed text.				
<b>1.4</b>	Headings and notes appearing shall not by itself be deemed to be comprehensive and do not modify the meaning of the items in the Bill of Quantities.				
<b>1.5</b>	Any rates found to be overpriced, inconsistently priced, underpriced or erroneously priced shall be subjected to adjustment, rectification and rationalisation before the signing of the contract and the authority to fix a reasonable rates/amount shall be with the S.O. The amended rates shall be used for computing the progress payments and the measuring of variations.				

1.6	Where Quantities in these Bill of Quantities are marked provisional, the works shall be remeasured on completion basing on drawings certified as true and correct representation of the completed works by the Superintending Officer.				
1.7	There shall be no alteration or amendment, specifying or submission of condition in contravention to those contained in Bills of Quantities. If such conditions are included, the tender submitted may not be considered and liable to be disqualified.				
<b>2.0</b>	<b><u>Currency of Payment</u></b>  Pricing of the Sub-Contract shall be in Malaysian Ringgit to two decimal place. Payment to the Nominated Sub-Contractor under the Sub-Contract shall be in Malaysian Ringgit.				
<b>3.0</b>	<b><u>Form of Sub-Contract</u></b>  The Conditions of Sub-Contract will be those contained in the Standard Form of Sub-Contract-PWD Form 203N Rev.1/2010 and Instruction To Tenderers (ITT). A copy of the said Form and General Condition which form part of the Tender Table Documents is available for inspection online (for online tendering) or during normal office hours on any working day up to the time appointed for receiving tenders.				
<b>4.0</b>	<b><u>Compliance with Safety Requirement and Regulations</u></b>  The Nominated Sub-Contractor shall always adhere to all requirement and regulations under Occupational Safety and Health Act and maintain a safe and healthy working environment through out the execution of Sub-Contract Works.				
<b>5.0</b>	<b><u>Making Good Defects During Defects Liability Period (DLP)</u></b>				
5.1	The Nominated Sub-Contractor shall make good of any defects, shrinkage and any other faults which may appear within the Defects Liability Period as provided in the Sub-Contract, commencing from Practical Completion of the Sub-Contract Works as certified by the S.O.				
5.2	No claim shall be entertained if the repair of any defects results an increment in cost.				
<b>6.0</b>	<b><u>Duty Stamping</u></b>  The Nominated Sub-Contractor shall solely bear the cost for stamp duties and anything incidental thereto.				
<b>B</b>	<b>PART II - PRICING OF PRELIMINARIES ITEMS</b>				
<b>1.0</b>	<b><u>Material and Workmanship</u></b>  The description of materials and workmanship in these Bill of Quantities and/or Drawings are to be read in conjunction with the relevant Specifications contained in the Sub-Contract. Materials and equipment supplied and installed shall comply with the condition set down in the Instruction To Tenderers (ITT).  Allow for submission of samples of materials and workmanship as the S.O.'s Representative may require for this approval before the materials are supplied and installed or workmanship are embodied in the finished works. All samples which are approved shall be retained on the Site and shall represent or indicate the standard to be maintained in the execution of the Sub-Contract Works. All samples shall be cleared away when no longer so required for the purpose.	Lump Sum	Lump Sum		
<b>2.0</b>	<b><u>Application To and Testing By The Authorities</u></b>  Allow for submission of applications, inspections, tests and approvals including the registration of the installation and endorsement of documents by professional/competant person in compliance to the requirements of the relevant Authorities having jurisdiction over the Sub-Contract Work. All cost and fees incurred in the process of gettings the Sub-Contract Works inspected, tested and approved by the relevant Authorities shall be included in the Sub-Contract Sum. No additional costs will be entertained in this respect.  It shall include the following but not limited to:- a) Earth Resistance test results shall be verified by a Service Engineer (The Earth Resistance Tester shall be calibrated every 2 years).	Lump Sum	Lump Sum		

	b) Test methods must comply with IEEE Std 81- Guide For Measuring Earth Resistivity, Ground Impedance and Earth Surface Potentials of a Grounding System.				
<b>3.0</b>	<b><u>Application To Internet and Telecommunication Provider</u></b>				
	Allow assisting client in liaising with Internet Service Provider (ISP) and Telecommunication Service Provider (TSP) Authorities for submission of registration and application for Internet and telephone system services.	Lump Sum	Lump Sum		
<b>4.0</b>	<b><u>Clause 24 - Insurance Against Personal Injuries and Property</u></b>				
	The Nominated Sub-Contractor shall be liable and shall indemnify both the Main Contractor and the Government against any expenses, damage, liability, loss, claim, or proceedings whatsoever arising from any common law or statute in the course of the execution of the Sub-Contract Works as per described under Clause 24.	Lump Sum	Lump Sum		
<b>5.0</b>	<b><u>Clause 26 - Employee's Social Security Act 1969</u></b>				
	The Nominated Sub-Contractor shall cause to register all local workmen under his employment under Employee's Social Security Scheme (SOCISO) in accordance with the Employment's Social Security Act 1969 or any subsequent modification and re-enactment of the said Act. The Nominated Sub-Contractor shall submit Code Number and Social Security Numbers of all workmen under the SOCISO scheme to the S.O for verification.	Lump Sum	Lump Sum		
	The Nominated Sub-Contractor shall make payment of all contributions from time to time on the first day on which the same ought to be paid and until the completion of the Sub-Contract Works, and upon demand the Nominated Sub-Contractor shall produce to the S.O's Representative contribution cards or stamp vouchers as evidence of payment of such contribution.				
<b>6.0</b>	<b><u>Clause 27 - Insurance of Sub-Contract Work</u></b>				
	The Nominated Sub-Contractor shall insure for the full value amount of the Sub-Contract Works (including materials and goods of the Nominated Sub-Contractor properly delivered on the Site for use in the Sub-Contract Works) and keep or have them kept insured against loss or damage by fire, lightning, explosion, storm, tempest, flood, ground subsidence, bursting or overflowing of water tanks, apparatus or pipes, aircraft and other aerial devices or articles dropped therefrom, riot and civil commotion as per described in Clause 27. All excesses, if any, imposed by the Insurance Company shall be borne by the Nominated Sub-Contractor.	Lump Sum	Lump Sum		
<b>7.0</b>	<b><u>Clause 28 - Performance Bond</u></b>				
	The Nominated Sub-Contractor shall, as a condition precedent to the commencement of any work under this Sub-Contract, deposit with the Contractor a performance bond in the form of a Banker's Draft or an approved Banker's or Insurance Guarantee equivalent to five (5%) percent of the Sub-Contract Sum to secure the due performance of the obligations under this Sub-Contract by the Nominated Sub-Contractor.	Lump Sum	Lump Sum		
<b>8.0</b>	<b><u>Protection of Existing Services</u></b>				
	Protect, uphold and maintain all existing and in use pipes, ducts, sewers, services mains, underground cables, etc. During the execution of the Sub-Contract Works, unless otherwise directed. If the Nominated Sub-Contractor discovers any underground cables, pipes, etc, he shall immediately stop work and report to the S.O's Representative of the findings. The Nominated Sub-Contractor shall be responsible for making good all damages to the cable, pipes, etc. and shall indemnify the Government against any claims as a results of such damage. Notes: Applicable for upgrading and renovation projects	Lump Sum	Lump Sum		
<b>9.0</b>	<b><u>Sub-Contract Work Programme</u></b>				
	Provide for implementing the Critical Path Method programme in conjunction with Main Contract Works for planning, monitoring, control of resources and progress of work shall include:	Lump Sum	Lump Sum		
	Planning, preparing, maintaining and updating the CPM programme preferably using latest version of Microsoft Project. The identification of critical path for the timely execution of the work to completion.				

<b>10.0</b>	<b><u>Competent Persons</u></b>				
10.1	The Nominated Sub-Contractor shall appoint a Competent Person or Competent Persons in compliance with the Electricity Regulations 1994 to provide necessary superintendence over the whole site operation for the full duration of the Sub-Contract Works and as long thereafter as the S.O.'s Representative may consider necessary for the proper fulfillment the Nominated Sub-Contractor's obligation under this Sub-Contract Works.	Lump Sum	Lump Sum		
10.2	The qualification of the Competent Persons shall be in compliance with the Electricity Regulations 1994 and approved by the S.O.'s Representative, and he shall be constantly on the Site and shall devote his whole time to the superintendence of the Sub-Contract Works. He shall take responsibility for the construction, installation testing, commissioning and operation of the whole Sub-Contract Works in compliance with the Electricity Regulations 1994 and any other laws having jurisdiction over the Sub-Contract Works.				
10.3	The S.O.'s Representative will be at liberty to object to and requires the Nominated Sub-Contractor to remove forthwith from the Site such Competent Person, who in the opinion of the S.O.'s Representative, misconducts himself or is incompetent or negligent in the proper considered by the S.O.'s Representative to be undesirable. The Nominated Sub-Contractor shall, upon the removal of such person, thereafter replaced as soon as possible a new Competent Person in compliance with the requirement of this section.				
<b>11.0</b>	<b><u>Resources For Site Safety</u></b>				
	The Nominated Sub-Contractor shall provide and maintain all Personal Protective Equipment required for the use of the S.O.'s Representative and his supervisory staff and any other officials complete as specified and complying with DOSH requirements. All items must obtain approval from the S.O.'s Representative. The items are as follows:				
	a) Safety Helmet (white colour c/w JKR's Logo)	Nos	2		
	b) Reflective Safety Vest/Protection Clothing (c/w JKR's Logo)	Nos	2		
	c) Safety Boots (2 Units for HODT Office)	Nos	4		
<b>12.0</b>	<b><u>Progress Reports and Photographs</u></b>				
	Allow for providing monthly reports including photographs showing the progress of the Sub-Contract Works in digital format, each of different view of the Sub-Contract Works as directed by the S.O.'s Representative. A total of three (3) sets of reports properly binded and the digital format shall be provided to the S.O.'s Representative (2 sets) and HODT office (1 set).	Lump Sum	Lump Sum		
<b>13.0</b>	<b><u>Shop / Working Drawings</u></b>				
13.1	Provide for the preparation, submission and thereafter the approval for construction from the S.O.'s Representative all shop / working drawings for the Sub-Contract Works as required in the relevant Specifications in the Sub-Contract. The contractor will be provided with project site plan and electrical layout drawings in digital format by JKR for shop/working drawing preparation.	Lump Sum	Lump Sum		
13.2	Detail final sub-circuits and switching arrangement, shall be prepared, calculated and approved before installation. Final sub-circuits shall include lighting and power installation.				
13.3	For the project using Building Information Modelling (BIM), all drawings shall be in 3D model using Autodesk REVIT software which includes preparation of all related electrical system complete with conduit and trunking, all components, system modeling and integration with all related building model not limited to Architectural, Structural and Mechanical model and other services. The integrated 3D model shall be used to generate working drawings as specified in the Sub-Contract.				
<b>14.0</b>	<b><u>Coordination of Work (IBS)</u></b>				
	All electrical works e.g. conduits, openings, back boxes, etc. shall be coordinated with IBS Provider, architectural and structural works for implementation of IBS including Modular Coordination at IBS plant.	Lump Sum	Lump Sum		

<b>15.0</b>	<b><u>Electrical Protection Schemes (Calibrations)</u></b>				
	Allow for fees and charges for the employment of an Electrical Services Contractor registered under Electricity Regulations 1994 to study and submit proposal (with relevant data and calculations) for the electrical protection scheme for the whole electrical installation in the Sub-Contract works. Thereafter, if the proposal is agreeable by the S.O.'s Representative, he shall check, test and calibrate accordingly all protective relays and device provided in the Sub-Contract Works to the requirements of the Electricity Regulations 1994. He shall also prepare, duly sign and submit all certification as required under Electricity Regulations 1994.	Lump Sum	Lump Sum		
<b>16.0</b>	<b><u>Clearing and Cleaning of Site</u></b>				
	The Nominated Sub-Contractor shall, upon completion of the work, remove away immediately from site all plants and surplus materials except those ordered to be left on the site, together with all rubbish and debris. The site is to be restored in a neat, clean and workmanlike manner to the satisfaction of the S.O.	Lump Sum	Lump Sum		
<b>17.0</b>	<b><u>Equipment Inventory List</u></b>				
17.1	Allow for preparation of inventory list for equipment installed as per in the Sub-Contract. The inventory list shall include and not limit to all data and particulars of the equipment and accessories pertaining to their types, models, descriptions and quantities. The format shall be in MS Excel of latest version as per Appendix A of Preliminaries. Two (2) sets of softcopy in CD-RW/DVD-RW and four (4) sets of hardcopy in comb binded shall be submitted to S.O.'s Representative.	Lump Sum	Lump Sum		
17.2	To submit four (4) sets of hardcopy & softcopy (CD-RW) of the following documents:  a) List of component in each room as specified in latest version of Sistem Pengurusan Bersepadu (SPB) JKR Malaysia, " <i>Borang Senarai Aset Tak Alih Mengikut Ruang (Lampiran 16)</i> ". A copy of this form should also be attached at each room during T&C for S.O verification purposes.	Lump Sum	Lump Sum		
<b>18.0</b>	<b><u>Documentation Upon Completion</u></b>				
	Upon completion of the work and before handing over, the Nominated Sub-Contractor shall submit documents as follow:  a) Four (4) sets contained the following documents, properly titled and bound in hard covers:  i) Installation Manuals, Operation Manuals, Service and Maintenance Manuals, and Part Lists for all equipment supplied and installed in the Sub-Contract;  ii) All Product Data and Catalogue of equipment supplied and installed in the Sub-Contract;  iii) All Supervision and Completion Certificate, and Test Certificate in compliance with the Electricity Regulations 1994;  iv) All other Test Certificates;  v) As-installed drawings as actually fixed pertaining to the Works including all services and facilities systems. The As-installed drawings shall be submitted by the Contractor for the approval of the S.O / S.O's Representative as to allow for a complete understanding of the Works as they were actually fixed;  vi) All Certificate of Warranties and Guarantees copies issued by the original equipment manufacturers.  b) i) <b>For BIM projects:</b> Four (4) sets of Digital Copies of As-installed drawings in AutoCAD(dwg.) and/or BIM 3D Model Revit MEP format to be stored in compact discs or physical digital storage.  ii) <b>For Non BIM projects:</b> Four (4) sets of Digital Copies of As-installed drawings in AutoCAD(dwg.) or any other compatible format to be stored in compact discs or physical digital storage.  c) Four (4) sets of Digital Copies of As-installed drawings in Acrobat (.pdf) to be stored in compact discs or physical digital storage.	Lump Sum	Lump Sum		



	d) All original Certificate of Warranties and Guarantees issued by the original equipment manufacturers.				
	e) One (1) copy of List of username and password (administrator) for logging in of ELV and ICT systems / equipments (if applicable).				
	f) One (1) set maintenance tools as prescribed in the relevant Specifications.				
19.0	<b><u>Sub-Contract Document</u></b>				
19.1	Allow for the cost for eight (8) copies of contract document binding. The document format shall follow as per JKR standard.	Lump Sum	Lump Sum		
<b>SUB-TOTAL FOR ITEM ( A ) CARRIED TO RINGKASAN TENDER :</b>					

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGensi ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN  
LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**B) BLOK PENTADBIRAN**

(All quantities are PROVISIONAL)

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	<p>To supply, install, testing and commissioning as per drawing and specifications.</p> <p>All quantities given are PROVISIONAL.</p> <p>The actual quantities installed shall be measured on site after completion and prices adjusted accordingly.</p>				
<b>1.0</b>	<b>WIRING</b>				
	<p><b>Notes:</b></p> <p>i) All wiring shall be installed as per drawing, relevant rules, regulation and specification.</p> <p>ii) Minimum cross section area of cpc in relation to the cross section area of associated phase conductor shall be install as per MS-IEC60364-5-54, Table 54.3</p> <p>iii) For top floor and wiring above ceiling shall be in galvanised steel (G.S), heavy gauge, Class B, screw typed conduits and electrogalvanised sheet steel trunking. The trunking shall be supported by fixing brackets. All accessories shall be provided such as brass bush, elbow, flexible GS conduit, saddle, adaptor and etc for complete installation.</p> <p>Any other items which not mentioned in this section, shall be comply with the latest revision of CKE.LS.01.01.(04).2018</p> <p>iv) All prices shall include the cost of conduits, trunking and any other accessories used for the wiring system.</p> <p>v) All concealed / surface conduit wiring shall use G.S conduit.</p> <p>vi) All wiring for Emergency Light &amp; Keluar Sign shall be in G.S Conduit conduit is embedded in the concrete.</p> <p>vii) All trunking shall used Electrogalvanised Trunking.</p> <p>ix) Switches for lighting and fans shall generally be grouped.</p> <p>x) Switch plates of size 85mm x 85mm (max. allowable number of big rocker switches is 3)</p> <p>xi) Back boxes for switches and switched socket outlet shall be of galvanised sheet steel type of minimum thickness 0.8mm.</p>				
<b>2.0</b>	<b>SURFACE GALVANISED STEEL CONDUIT WIRING</b>				
	<p>As per drawing no.:-</p> <p>HQL.34/2021/LV/10(27)</p> <p>HQL.34/2021/LV/11(27)</p> <p>HQL.34/2021/LV/12(27)</p> <p>HQL.34/2021/LV/13(27)</p> <p>HQL.34/2021/LV/14(27)</p> <p>HQL.34/2021/LV/15(27)</p>				
2.1	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC:				
	a) Aras 1	Nos.	61		
	b) Aras 2	Nos.	7		
	c) Aras Tangki Air	Nos.	7		
2.2	10A 1 Way SP <b>metalclad switch</b> c/w back box:				
	a) Aras 1	Nos.	3		
	b) Aras 2	Nos.	2		
	c) Aras Tangki Air	No.	1		
2.3	10A 1 gang 1 Way SP big rocker switch c/w back box:				
	a) Aras 1	Nos.	11		
2.4	10A 1 gang 2 Way SP big rocker switch c/w back box:				
	a) Aras 1	Nos.	4		
	b) Aras 2	Nos.	2		
	c) Aras Tangki Air	No.	1		
2.5	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC for self-contained emergency light:				
	a) Aras 1	Nos.	4		
	b) Aras 2	Nos.	3		

2.6	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC for Keluar Sign:				
	a) Aras 1	Nos.	5		
	b) Aras 2	No.	1		
2.7	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin metalclad switched socket outlet (1450mm above finished floor level):				
	a) Aras 1	Nos.	5		
	b) Aras 2	Nos.	3		
	c) Aras Tangki Air	Nos.	2		
2.8	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin switched socket outlet (400mm above finished floor level):				
	a) Aras 1	Nos.	3		
2.9	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin switched socket outlet for <b>Equipment Rack</b> (1450mm above finished floor level):				
	a) Aras 1	Nos.	3		
	b) Aras 2	No.	1		
2.10	Exhaust fan point using 2 x 1.5 sq. mm PVC cable & CPC c/w ceiling rose (Interlock with lighting):				
	a) Aras 1	No.	1		
	b) Aras 2	No.	1		
2.11	Wall fan point using 2 x 1.5 sq. mm PVC cable & CPC c/w 3 plate ceiling rose and other necessary accessories:				
	a) Aras 1	No.	1		
<b>3.0</b>	<b>CONCEALED GALVANISED STEEL CONDUIT WIRING</b>				
	As per drawing no.:- HQL.34/2021/LV/10(27) HQL.34/2021/LV/11(27) HQL.34/2021/LV/12(27) HQL.34/2021/LV/13(27) HQL.34/2021/LV/14(27) HQL.34/2021/LV/15(27)				
3.1	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC:				
	a) Aras 1	Nos.	82		
	b) Aras 2	Nos.	43		
3.2	10A 1 gang 1 Way SP big rocker switch c/w back box:				
	a) Aras 1	Nos.	28		
	b) Aras 2	Nos.	24		
3.3	10A 2 gang 1 Way SP big rocker switch c/w back box:				
	a) Aras 1	Nos.	4		
3.4	10A 3 gang 1 Way SP big rocker switch c/w back box:				
	a) Aras 1	Nos.	5		
3.5	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC switch controlled by Motion Sensor.				
	a) Aras 1	Nos.	3		
3.6	Alarm and emergency warning system for Tandas OKU:	Lot	2		
	a) Buzzer, flashlight point and reset button point using 2 x 1.5 sq. mm PVC cable c/w CPC				
	b) Pull cord switch with 2 red bangles for flashlight and buzzer (height of bangles 1000mm and 100mm respectively)				
	c) Reset button (1000mm above finished floor level)				
	d) Flashlight and buzzer				
3.7	Exhaust fan point using 2 x 1.5 sq. mm PVC cable & CPC c/w ceiling rose (Interlock with lighting):				
	a) Aras 1	Nos.	21		
	b) Aras 2	No.	6		
3.8	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC for self-contained emergency light:				
	a) Aras 1	Nos.	9		
	b) Aras 2	Nos.	8		

3.9	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC for Keluar Sign: a) Aras 1 b) Aras 2	Nos. Nos.	11 4		
3.10	Wall fan point using 2 x 1.5 sq. mm PVC cable & CPC c/w 3 plate ceiling rose and other necessary accessories: a) Aras 1	No.	7		
3.11	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin flushed switched socket outlet ( <b>400mm above finished floor level</b> ): a) Aras 1 b) Aras 2	Nos. Nos.	30 35		
3.12	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin flushed switched socket outlet ( <b>1000mm above finished floor level</b> ): a) Aras 1 b) Aras 2	Nos. Nos.	5 4		
3.13	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin flushed switched socket outlet for <b>Hand Dryer</b> (1450mm above finished floor level): a) Aras 1 b) Aras 2	Nos. Nos.	4 2		
3.14	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin flushed switched socket outlet for <b>Fire Alarm Panel</b> (1450mm above finished floor level) (extra 1m length to be coil in box c/w blank plate): a) Aras 1	No.	1		
3.15	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC c/w underfloor type SSO through <b>underfloor trunking system</b> from Distribution Boards (DB's) to underfloor service box: a) Aras 1 b) Aras 2	Nos. Nos.	54 39		
3.16	Socket outlet point using 2 x 4.0 sq. mm PVC cable c/w CPC with 32A DP switch with indicator light and 15A 3 pin round flushed switched socket outlet for <b>wall mounted aircond</b> (300mm below ceiling level): a) Aras 1 b) Aras 2	Nos. Nos.	2 3		
3.17	Socket outlet point using 2 x 4.0 sq. mm PVC cable c/w CPC with 32A DP switch with indicator light and 15A 3 pin round <b>metalclad</b> switched socket outlet for <b>ceiling cassette aircond</b> (above ceiling level): a) Aras 1 b) Aras 2	Nos. Nos.	11 6		
3.18	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC with 20A DP switch with indicator light c/w 1 gang 13A 3 pin <b>metalclad</b> unswitched socket outlet point for <b>projector</b> (above ceiling level): a) Aras 1 b) Aras 2	Nos. Nos.	2 2		
3.19	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC with 20A DP switch c/w 1 gang 13A 3 pin <b>metalclad</b> unswitched socket outlet point for <b>motorised screen</b> (above ceiling level): a) Aras 1 b) Aras 2	No. No.	1 1		
3.20	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin switched socket outlet for <b>Card Access</b> (above ceiling level): a) Aras 1 b) Aras 2	Nos. Nos.	6 2		
3.21	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin switched socket outlet for <b>Monitor Speaker</b> (1000mm above finished floor level): a) Aras 1	No.	1		

3.22	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin switched socket outlet for <b>Sound Reinforcement System</b> (1000mm above finished floor level):				
a) Aras 1		No.	1		
3.23	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin switched socket outlet for <b>Equipment Rack</b> (1450mm above finished floor level):				
a) Aras 1		No.	1		
b) Aras 2		No.	1		
<b>4.0</b>	<b>LUMINAIRES AND EQUIPMENT</b>				
<b>4.1</b>	<b>INDOOR LED LUMINAIRES</b>				
<b>4.1.1</b>	<b>T8 LED LUMINAIRES</b>				
4.1.1.1	1 x (6 to 11watt) <b>Ceiling Mounted Bare Channel</b> c/w Self Ballasted Double Capped T8 LED Tube (1200mm, CCT 4000K):				
a) Aras 1		Nos.	33		
4.1.1.2	1 x (6 to 11watt) <b>Wall Mounted Bare Channel</b> c/w Self Ballasted Double Capped T8 LED Tube (1200mm, CCT 4000K):				
a) Aras 1		No.	1		
b) Aras 2		Nos.	2		
4.1.1.3	1 x (12 to 20watt) <b>Ceiling Mounted Bare Channel</b> c/w Self Ballasted Double Capped T8 LED Tube (1200mm, CCT 4000K):				
a) Aras 1		Nos.	8		
b) Aras 2		No.	1		
4.1.1.4	1 x (12 to 20watt) <b>Wall Mounted Bare Channel</b> c/w Self Ballasted Double Capped T8 LED Tube (1200mm, CCT 4000K):				
a) Aras 1		Nos.	7		
b) Aras 2		Nos.	3		
4.1.1.5	2 x (12 to 20watt) <b>Ceiling Mounted Bare Channel</b> c/w Self Ballasted Double Capped T8 LED Tube (1200mm, CCT 4000K):				
a) Aras 1		Nos.	3		
4.1.1.6	2 x (12 to 20watt) <b>Wall Mounted Bare Channel</b> c/w Self Ballasted Double Capped T8 LED Tube (1200mm, CCT 4000K):				
a) Aras 1		Nos.	2		
b) Aras 2		No.	1		
c) Aras Tangki Air		No.	1		
4.1.1.7	3 x (6 to 11watt) <b>Recessed Mounted Luminaire</b> c/w Self Ballasted Double Capped T8 LED Tube, Single Parabolic Reflector & Cross Blade Louvre (600mm x 600mm module, Tee Bar Ceiling, CCT 4000K):				
a) Aras 1		Nos.	24		
b) Aras 2		Nos.	5		
4.1.1.8	2 x (12 to 20watt) <b>Recessed Mounted Luminaire</b> c/w Self Ballasted Double Capped T8 LED Tube, Single Parabolic Reflector & Cross Blade Louvre (1200mm x 600mm module, Tee Bar Ceiling, CCT 4000K):				
a) Aras 1		Nos.	40		
b) Aras 2		Nos.	35		
4.1.1.9	1 x 38watt T8 <b>Prison Luminaire</b> c/w Acrylic Lens Cover (1200mm, IK10, IP66, CCT 4000K):				
a) Aras 1		Nos.	5		
4.1.1.10	1 x (12 to 20watt) <b>Wall Mounted Bare Channel Weatherproof Type</b> (IP54) c/w Self Ballasted Double Capped T8 LED Tube (1200mm, CCT 4000K):				
a) Aras Tangki Air		Nos.	6		
<b>4.1.2</b>	<b>LED DOWNLIGHT LUMINAIRES</b>				
i)	The luminaires shall consist two separate components comprising of LED driver and optical system for LED Downlight.				
ii)	The construction of the luminaires shall be either two separate housing/compartements or integrated.				

4.1.2.1	18 to 20watt LED Recessed Downlight Luminaire c/w frosted glass diffuser (200mm dia., CCT 4000K): a) Aras 1 b) Aras 2	Nos. Nos.	20 3		
<b>4.1.3</b>	<b>EMERGENCY LIGHT &amp; KELUAR SIGN</b>				
4.1.3.1	Surface mounted LED emergency luminaire c/w 3 hours duration battery back-up (approved by Jabatan Bomba): a) Aras 1 b) Aras 2	Nos. Nos.	4 3		
4.1.3.2	Recessed type LED emergency luminaire c/w 3 hours duration battery back-up (approved by Jabatan Bomba): a) Aras 1 b) Aras 2	Nos. Nos.	8 8		
4.1.3.3	LED Keluar Sign c/w 3 hours duration battery back-up (approved by Jabatan Bomba): a) Aras 1 b) Aras 2	Nos. Nos.	16 5		
<b>4.2</b>	<b>FAN</b>				
4.2.1	400mm dia. wall fan c/w integrated thermal fuse, 3 speed On/Off push button switch, full automatic oscillation control, aluminium blade and all necessary accessories: a) Aras 1	Nos.	2		
4.2.2	500mm dia. industrial wall fan c/w integrated thermal fuse, 3 speed On/Off pull switch, full automatic oscillation control, aluminium blade, turbo fin guard cover and all necessary accessories: a) Aras 1	Nos.	6		
<b>5.0</b>	<b>SENSOR</b>				
	<b>Motion Sensor</b>				
5.1	Supply and install high-performance Passive Infra Red (PIR) / Ultrasonic motion sensor with minimum 3 meters distance of detection and detection angle in range between 110° to 360° for lighting control, c/w built in delay timer (adjustable), wiring and accessories, recessed and surface mounted as per drawing. a) Aras 1	Nos.	3		
<b>6.0</b>	<b>UNDERFLOOR TRUNKING SYSTEM</b>				
i)	To supply, install, testing and commissioning of underfloor trunking system for distribution of power, telecommunication and networking services as per specification and drawing.  As per drawing no.:- HQL.34/2021/LV/13(27) HQL.34/2021/LV/14(27)				
6.1	Single compartment heavy duty gauge super Heavy Duty uPVC ducting of the following sizes and c/w suitable fixing clip, jointing sleeve, etc.: 3 way of size 100mm x 25mm a) Aras 1 (approximate length: 40 meter)  b) Aras 2 (approximate : 50 meter)	Lump Sum Lump Sum	Lump Sum Lump Sum		
6.2	Supply and install Junction box c/w zinc alloy die-casting cover, gasket, trapframe, disposable lid, etc. of the following sizes and type: 250mm x 250mm x 56mm 3 compartment c/w galvanised steel flyover. a) Aras 1 b) Aras 2	Nos. Nos.	8 7		

6.3	Supply and install Underfloor Service outlet box c/w zinc alloy die-casting cover of size:				
6.3.1	300mm x 300mm x 56mm 3 compartment service outlets for 3 Nos 1 gang 13A 3 pin switched socket outlet underfloor type, 1 no. (RJ 45) underfloor type angular faceplate for telephone and 1 no. (RJ 45) underfloor type angular faceplate for network point. (Flushed socket outlets with side wire entries to suit underfloor service boxes. The trap and frame height to suit finished floor level (6mm for carpet and 9mm for vinyl tile)).				
	a) Aras 1	Nos.	18		
	b) Aras 2	Nos.	13		
6.3.2	300mm x 300mm x 56mm 3 compartment service outlets for 2 Nos 1 gang 13A 3 pin switched socket outlet underfloor type, 1 no. (RJ 45) underfloor type angular faceplate for network point and 1 no. HDMI point. (Flushed socket outlets with side wire entries to suit underfloor service boxes. The trap and frame height to suit finished floor level (6mm for carpet and 9mm for vinyl tile)).				
	a) Aras 1	Nos.	2		
6.3.3	300mm x 300mm x 56mm 3 compartment service outlets for 3 Nos 1 gang 13A 3 pin switched socket outlet underfloor type and 1 no. (RJ 45) underfloor type angular faceplate for network point. (Flushed socket outlets with side wire entries to suit underfloor service boxes. The trap and frame height to suit finished floor level (6mm for carpet and 9mm for vinyl tile)).				
	a) Aras 2	Nos.	2		
6.4	Supply and install Vertical access box of size: 250mm(W) x 25mm(H) 3 compartment vertical access box.				
	a) Aras 1	Nos.	3		
	b) Aras 2	Nos.	2		
<b>7.0</b>	<b>SWITCH DISCONNECTOR (ISOLATOR)</b>				
i)	To supply and install Metalclad / Polycarbonate Switch Disconnecter (Isolator).				
7.1	20A DP <b>Polycarbonate</b> Switch Disconnecter (Isolator) c/w termination for wall mounted aircond:				
	a) Aras 1	Nos.	3		
7.2	20A DP <b>Metalclad</b> Switch Disconnecter (Isolator) c/w termination for wall mounted aircond:				
	a) Aras 1	Nos.	2		
	b) Aras 2	No.	1		
7.3	32A DP <b>Polycarbonate</b> Switch Disconnecter (Isolator) c/w termination for wall mounted aircond:				
	a) Aras 2	Nos.	5		
7.4	20A TPN <b>Metalclad</b> Switch Disconnecter (Isolator) c/w termination for hydropneumatic pump:				
	a) Aras Tangki Air	No.	1		
7.5	16 TPN Weatherproof Switch Disconnecter (Isolator) c/w termination for pump SSTs:				
	a) Rumah SSTs	No.	1		
<b>8.0</b>	<b>SUBMAINS CABLES</b>				
i)	To supply, install, testing and commissioning submains cables as per drawing and specifications.				
ii)	Submain Cable in electrogalvanised trunking c/w CPC, bracket, supports and other required accessories.				
8.1	4 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from:				
	a) SSB 'NE to DB '1L' at Bilik Suis, Aras Satu (approximate length 10 meter)	Lump Sum	Lump Sum		
8.2	2 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from:				
	a) SSB 'NE to DB '2L' at Bilik Suis, Aras Dua (approximate length 15 meter)	Lump Sum	Lump Sum		

8.3	2 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) SSB 'E' to DB 'E1L' at Bilik Suis, Aras Satu (approximate length 10 meter)	Lump Sum	Lump Sum		
8.4	2 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) SSB 'E' to DB 'E2L' at Bilik Suis, Aras Dua (approximate length 15 meter)	Lump Sum	Lump Sum		
8.5	4 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) SSB 'NE' to DB '1P' at Bilik Suis, Aras Satu (approximate length 10 meter)	Lump Sum	Lump Sum		
8.6	4 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) SSB 'NE' to DB '2P' at Bilik Suis, Aras Dua (approximate length 15 meter)	Lump Sum	Lump Sum		
8.7	2 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) SSB 'E' to DB 'E1P' at Bilik Suis, Aras Satu (approximate length 10 meter)	Lump Sum	Lump Sum		
8.8	2 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) SSB 'E' to DB '1ELV' at Bilik Suis, Aras Satu (approximate length 10 meter)	Lump Sum	Lump Sum		
8.9	4 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) SSB 'NM' to DB '1M' at Bilik Suis, Aras Satu (approximate length 10 meter)	Lump Sum	Lump Sum		
8.10	4 x 25 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) SSB 'NM' to MDB '2M' at Bilik Suis, Aras Dua (approximate length 15 meter)	Lump Sum	Lump Sum		
8.11	4 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) SSB 'NM' to 20A TPN Metalclad Switch Disconnecter (Isolator) for hydropneumatic pump at Aras Tangki Air (approximate length 25 meter)	Lump Sum	Lump Sum		
8.12	2 x 6 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) SSB 'NM' to 20A DP Metalclad Switch Disconnecter (Isolator) for wall mounted aircond at Bilik TCR, Aras Satu (approximate length 10 meter)	Lump Sum	Lump Sum		
8.13	2 x 6 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) SSB 'NM' to 20A DP Metalclad Switch Disconnecter (Isolator) for wall mounted aircond at Bilik SDF, Aras Satu (approximate length 25 meter)	Lump Sum	Lump Sum		
8.14	2 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) SSB 'NM' to 20A DP Polycarbonate Switch Disconnecter (Isolator) for wall mounted aircond at Makmal Ujian Urin, Aras Satu (approximate length 25 meter)	Lump Sum	Lump Sum		
8.15	2 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) SSB 'NM' to 20A DP Polycarbonate Switch Disconnecter (Isolator) for wall mounted aircond at Security Equipment Room, Aras Satu (approximate length 40 meter)	Lump Sum	Lump Sum		
8.16	2 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) SSB 'NM' to 20A DP Polycarbonate Switch Disconnecter (Isolator) for wall mounted aircond at Security Equipment Room, Aras Satu (approximate length 40 meter)	Lump Sum	Lump Sum		



8.17	2 x 6 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) MDB '2M' to 20A DP Metalclad Switch Disconnecter (Isolator) for wall mounted aircond at Bilik TCR, Aras Dua (approximate length 10 meter)	Lump Sum	Lump Sum		
8.18	2 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) MDB '2M' to 32A DP Polycarbonate Switch Disconnecter (Isolator) for wall mounted aircond at Bilik Gerakan, Aras Dua (approximate length 25 meter)	Lump Sum	Lump Sum		
8.19	2 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) MDB '2M' to 32A DP Polycarbonate Switch Disconnecter (Isolator) for wall mounted aircond at Bilik Gerakan, Aras Dua (approximate length 25 meter)	Lump Sum	Lump Sum		
8.20	2 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) MDB '2M' to 32A DP Polycarbonate Switch Disconnecter (Isolator) for wall mounted aircond at Bilik Gerakan, Aras Dua (approximate length 25 meter)	Lump Sum	Lump Sum		
8.21	2 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) MDB '2M' to 32A DP Polycarbonate Switch Disconnecter (Isolator) for wall mounted aircond at Bilik Gerakan, Aras Dua (approximate length 25 meter)	Lump Sum	Lump Sum		
8.22	2 x 10 sq. mm PVC cable in electrogalvanised trunking c/w CPC from: a) MDB '2M' to 32A DP Polycarbonate Switch Disconnecter (Isolator) for wall mounted aircond at Bilik Ketua Pegawai, Aras Dua (approximate length 20 meter)	Lump Sum	Lump Sum		
<b>9.0</b>	<b>MAIN DISTRIBUTION BOARD (MDB)</b>				
	i) To supply, install, test and commission wall mounted Electrogalvanised MDB c/w bracket and including all cable terminations as per specification and drawing. As per drawing no.:- HQL.34/2021/LV/18(27)				
9.1	<b>MDB '2M'</b> at Bilik Suis, Aras Dua.	Lot.	1		
<b>10.0</b>	<b>DISTRIBUTION BOARD (DB)</b>				
	i) To supply, install, test and commission wall mounted Electrogalvanised DB's c/w bracket and including all cable terminations as per specification and drawing.  As per drawing no.:- HQL.34/2021/LV/16(27) HQL.34/2021/LV/17(27) HQL.34/2021/LV/18(27)				
10.1	8 Ways TPN <b>DB '1L'</b> at Bilik Suis, Aras Satu.	Lot.	1		
10.2	8 Ways TPN <b>DB '1P'</b> at Bilik Suis, Aras Satu.	Lot.	1		
10.3	6 Ways TPN <b>DB '1M'</b> at Bilik Suis, Aras Satu.	Lot.	1		
10.4	14 Ways SPN <b>DB 'E1L'</b> at Bilik Suis, Aras Satu.	Lot.	1		
10.5	10 Ways SPN <b>DB 'E1P'</b> at Bilik Suis, Aras Satu.	Lot.	1		
10.6	4 Ways SPN <b>DB '1ELV'</b> c/w SPD in separate Electrogalvanised Enclosure at Bilik Suis, Aras Satu.	Lot.	1		
10.7	6 Ways SPN <b>DB '2L'</b> at Bilik Suis, Aras Dua.	Lot.	1		
10.8	10 Ways SPN <b>DB 'E2L'</b> at Bilik Suis, Aras Dua.	Lot.	1		
10.9	8 Ways TPN <b>DB '2P'</b> at Bilik Suis, Aras Dua.	Lot.	1		
<b>SUB-TOTAL FOR ITEM ( B ) CARRIED TO RINGKASAN TENDER :</b>					

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**C) BLOK SOKONGAN (PONDOK PENGAWAL, TEMPAT LETAK KERETA BERBUMBUNG, RUMAH PAM, BILIK GENSET & MSB DAN GARAJ BLACK MARIA)**

(All quantities are PROVISIONAL)

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	<p>To supply, install, testing and commissioning as per drawing and specifications.</p> <p>All quantities given are PROVISIONAL.</p> <p>The actual quantities installed shall be measured on site after completion and prices adjusted accordingly.</p> <p><b>(I) PONDOK PENGAWAL</b></p> <p>As per drawing no.:- HQL.34/2021/LV/19(27)</p> <p><b>1.0 WIRING</b></p> <p><b>Notes:</b></p> <p>i) All wiring shall be installed as per drawing, relevant rules, regulation and specification.</p> <p>ii) Minimum cross section area of cpc in relation to the cross section area of associated phase conductor shall be install as per MS-IEC60364-5-54, Table 54.3</p> <p>iii) For top floor and wiring above ceiling shall be in galvanised steel (G.S), heavy gauge, Class B, screw typed conduits and electrogalvanised sheet steel trunking. The trunking shall be supported by fixing brackets. All accessories shall be provided such as brass bush, elbow, flexible GS conduit, saddle, adaptor and etc for complete installation.</p> <p>Any other items which not mentioned in this section, shall be comply with the latest revision of CKE.LS.01.01.(04).2018</p> <p>iv) All prices shall include the cost of conduits, trunking and any other accessories used for the wiring system.</p> <p>v) All concealed / surface conduit wiring shall use G.S conduit.</p> <p>vi) All wiring for Emergency Light &amp; Keluar Sign shall be in G.S Conduit conduit is embedded in the concrete.</p> <p>vii) All trunking shall used Electrogalvanised Trunking.</p> <p>ix) Switches for lighting and fans shall generally be grouped.</p> <p>x) Switch plates of size 85mm x 85mm (max. allowable number of big rocker switches is 3)</p> <p>xi) Back boxes for switches and switched socket outlet shall be of galvanised sheet steel type of minimum thickness 0.8mm.</p> <p><b>2.0 SURFACE / CONCEALED GALVANISED STEEL CONDUIT WIRING</b></p>				
2.1	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC.	Nos.	7		
2.2	Lighting point using 2 x 2.5 sq. mm PVC cable c/w CPC.	Nos.	2		
2.3	10A 1 gang 1 Way SP big rocker switch c/w back box.	Nos.	2		
2.4	15A 1 gang 1 Way SP sliding weatherproof switch.	No.	1		
2.5	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC for self-contained emergency light.	No.	1		
2.6	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin switched socket outlet (1000mm above finished floor level).	Nos.	2		
2.7	Socket outlet point using 2 x 4.0 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin switched socket outlet for <b>Equipment Rack</b> (1450mm above finished floor level).	No.	1		
2.8	Socket outlet point using 2 x 4.0 sq. mm PVC cable c/w CPC with 32A DP switch with indicator light and 15A 3 pin round flushed switched socket outlet for wall mounted aircond (300mm below ceiling level).	No.	1		

2.9	Exhaust fan point using 2 x 1.5 sq. mm PVC cable & CPC c/w ceiling rose (Interlock with lighting).	No.	1		
2.10	Wall fan point using 2 x 1.5 sq. mm PVC cable & CPC c/w 3 plate ceiling rose and other necessary accessories.	No.	1		
<b>3.0</b>	<b>LUMINAIRES AND EQUIPMENT</b>				
<b>3.1</b>	<b>INDOOR LED LUMINAIRES</b>				
<b>3.1.1</b>	<b>T8 LED LUMINAIRES</b>				
3.1.1.1	1 x (12 to 20watt) <b>Ceiling Mounted Bare Channel</b> c/w Self Ballasted Double Capped T8 LED Tube (1200mm, CCT 4000K).	Nos.	2		
3.1.1.2	1 x (12 to 20watt) <b>Wall Mounted Bare Channel Weatherproof Type</b> (IP54) c/w Self Ballasted Double Capped T8 LED Tube (1200mm, CCT 4000K).	Nos.	4		
3.1.1.3	2 x (12 to 20watt) <b>Recessed Mounted Luminaire</b> c/w Self Ballasted Double Capped T8 LED Tube, Single Parabolic Reflector & Cross Blade Louvre (1200mm x 600mm module, Tee Bar Ceiling, CCT 4000K).	No.	1		
<b>3.1.2</b>	<b>EMERGENCY LIGHT</b>				
3.1.2.1	Surface mounted LED emergency luminaire c/w 3 hours duration battery back-up (approved by Jabatan Bomba).	No.	1		
<b>3.1.3</b>	<b>OTHERS LUMINAIRES</b>				
3.1.3.1	30 to 100watt LED Floodlight c/w bracket, die cast aluminium body, durable high quality paint minimises effect of corrosion, tempered glass, integral non-dimmable LED Driver with 1.5kV surge protection and others necessary accessories (IP66, CCT 5000K).	Nos.	2		
<b>3.2</b>	<b>FAN</b>				
3.2.1	400mm dia. wall fan c/w integrated thermal fuse, 3 speed On/Off push button switch, full automatic oscillation control, aluminium blade and all necessary accessories.	No.	1		
<b>4.0</b>	<b>DISTRIBUTION BOARD (DB)</b>				
i)	To supply, install, test and commission wall mounted Electro galvanised DB's c/w bracket and including all cable terminations as per specification and drawing.				
4.1	8 Ways SPN DB 'EPP' at Pondok Pengawal.	Lot.	1		
<b>5.0</b>	<b>EARTHING SYSTEM</b>				
5.1	To supply and install earthing system using 1 x 10 sq.mm PVC Green cable from DB 'EPP' earthing terminal to earth chamber.	Lump Sum	Lump Sum		
5.2	1 x 16 sq.mm PVC Green Earth Wire.	Lump Sum	Lump Sum		
5.3	≥ 14mm dia. x 3000mm (L) copper jacketed (minimum radial thickness 0.25mm) steel core earth electrode c/w precast heavy duty concrete earth chamber & removable concrete cover etc. Repeat if required (R<3Ω)	Lot.	1		
<b>(II)</b>	<b>TEMPAT LETAK KERETA BERBUMBUNG</b>				
	As per drawing no.: - HQL.34/2021/LV/20(27)				
<b>1.0</b>	<b>WIRING</b>				
	<b>Notes:</b>				

	<p>i) All wiring shall be installed as per drawing, relevant rules, regulation and specification.</p> <p>ii) Minimum cross section area of cpc in relation to the cross section area of associated phase conductor shall be install as per MS-IEC60364-5-54, Table 54.3</p> <p>iii) For top floor and wiring above ceiling shall be in galvanised steel (G.S), heavy gauge, Class B, screw typed conduits and electrogalvanised sheet steel trunking. The trunking shall be supported by fixing brackets. All accessories shall be provided such as brass bush, elbow, flexible GS conduit, saddle, adaptor and etc for complete installation.</p> <p>Any other items which not mentioned in this section, shall be comply with the latest revision of CKE.LS.01.01.(04).2018</p> <p>iv) All prices shall include the cost of conduits, trunking and any other accessories used for the wiring system.</p> <p>v) All concealed / surface conduit wiring shall use G.S conduit.</p> <p>vi) All wiring for Emergency Light &amp; Keluar Sign shall be in G.S Conduit conduit is embedded in the concrete.</p> <p>vii) All trunking shall used Electrogalvanised Trunking.</p> <p>ix) Switches for lighting and fans shall generally be grouped.</p> <p>x) Switch plates of size 85mm x 85mm (max. allowable number of big rocker switches is 3)</p> <p>xi) Back boxes for switches and switched socket outlet shall be of galvanised sheet steel type of minimum thickness 0.8mm.</p>				
<b>2.0</b>	<b>SURFACE GALVANISED STEEL CONDUIT WIRING</b>				
2.1	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC.	Nos.	4		
<b>3.0</b>	<b>LUMINAIRES AND EQUIPMENT</b>				
<b>3.1</b>	<b>T8 LED LUMINAIRES</b>				
3.1.1	1 x (12 to 20watt) <b>Ceiling Mounted Bare Channel</b> c/w Self Ballasted Double Capped T8 LED Tube (1200mm, CCT 4000K):	Nos.	4		
<b>4.0</b>	<b>TAP - OFF</b>				
4.1	Electrogalvanised Weatherproof type Tap-Off 'GB' (IP54) c/w cable gland, surface mounted 50mm dia. G.I Pipe Class B conduit from electrical pit to Tap-Off at Tempat Letak Kereta Berbung.	Lot	1		
<b>(III)</b>	<b>RUMAH PAM</b>				
	As per drawing no.:- HQL.34/2021/LV/21(27)				
<b>1.0</b>	<b>WIRING</b>				
	<p><b>Notes:</b></p> <p>i) All wiring shall be installed as per drawing, relevant rules, regulation and specification.</p> <p>ii) Minimum cross section area of cpc in relation to the cross section area of associated phase conductor shall be install as per MS-IEC60364-5-54, Table 54.3</p> <p>iii) For top floor and wiring above ceiling shall be in galvanised steel (G.S), heavy gauge, Class B, screw typed conduits and electrogalvanised sheet steel trunking. The trunking shall be supported by fixing brackets. All accessories shall be provided such as brass bush, elbow, flexible GS conduit, saddle, adaptor and etc for complete installation.</p> <p>Any other items which not mentioned in this section, shall be comply with the latest revision of CKE.LS.01.01.(04).2018</p> <p>iv) All prices shall include the cost of conduits, trunking and any other accessories used for the wiring system.</p> <p>v) All concealed / surface conduit wiring shall use G.S conduit.</p> <p>vi) All wiring for Emergency Light &amp; Keluar Sign shall be in G.S Conduit conduit is embedded in the concrete.</p> <p>vii) All trunking shall used Electrogalvanised Trunking.</p> <p>ix) Switches for lighting and fans shall generally be grouped.</p> <p>x) Switch plates of size 85mm x 85mm (max. allowable number of big rocker switches is 3)</p> <p>xi) Back boxes for switches and switched socket outlet shall be of galvanised sheet steel type of minimum thickness 0.8mm.</p>				

<b>2.0 SURFACE GALVANISED STEEL CONDUIT WIRING</b>					
2.1	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC.	Nos.	4		
2.2	10A 1 Way SP <b>metalclad switch</b> c/w back box.	Nos.	2		
2.3	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC for self-contained emergency light.	No.	1		
2.4	Socket outlet point using 2 x 2.5 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin <b>metalclad</b> switched socket outlet (1450mm above finished floor level):	Nos.	2		
2.5	Exhaust fan point using 2 x 1.5 sq. mm PVC cable & CPC c/w ceiling rose (Interlock with lighting).	Nos.	2		
<b>3.0 LUMINAIRES AND EQUIPMENT</b>					
<b>3.1 INDOOR LED LUMINAIRES</b>					
<b>3.1.1 T8 LED LUMINAIRES</b>					
3.1.1.1	2 x (12 to 20watt) <b>Wall Mounted Bare Channel</b> c/w Self Ballasted Double Capped T8 LED Tube (1200mm, CCT 4000K):	Nos.	2		
3.1.1.2	1 x (12 to 20watt) <b>Wall Mounted Bare Channel Weatherproof Type</b> (IP54) c/w Self Ballasted Double Capped T8 LED Tube (1200mm, CCT 4000K).	Nos.	2		
<b>3.1.2 EMERGENCY LIGHT</b>					
3.1.2.1	Wall mounted LED emergency luminaire c/w 3 hours duration battery back-up (approved by Jabatan Bomba).	No.	1		
<b>4.0 SWITCH DISCONNECTOR (ISOLATOR) / MCCB</b>					
i) To supply and install Metalclad / Polycarbonate Switch Disconnecter (Isolator).					
4.1	20A TPN <b>Metalclad</b> Switch Disconnecter (Isolator) c/w termination for hose reel pump.	No.	1		
4.2	32A TPN <b>Metalclad</b> Switch Disconnecter (Isolator) c/w termination for suction pump.	No.	1		
<b>5.0 SUBMAINS CABLES</b>					
i) To supply, install, testing and commissioning submains cables as per drawing and specifications.					
ii) Submain Cable in electrogalvanised trunking c/w CPC, bracket, supports and other required accessories.					
5.1	<b>4 x 6 sq. mm PVC</b> cable in electrogalvanised trunking c/w CPC from:				
	a) DB 'ERP' to 20A TPN Metalclad Switch Disconnecter (Isolator) for hose reel pump (approximate length 10 meter).	Lump Sum	Lump Sum		
	b) DB 'ERP' to 32A TPN Metalclad Switch Disconnecter (Isolator) for suction pump (approximate length 10 meter).	Lump Sum	Lump Sum		
<b>6.0 DISTRIBUTION BOARD (DB)</b>					
i) To supply, install, test and commission wall mounted Electrogalvanised DB's c/w bracket and including all cable terminations as per specification and drawing.					
6.1	TPN DB 'ERP' at Rumah Pam.	Lot.	1		
<b>(IV) BILIK GENSET &amp; MSB</b>					
As per drawing no.: HQL.34/2021/LV/22(27)					

<b>1.0</b>	<b>WIRING</b>				
	<b>Notes:</b> i) All wiring shall be installed as per drawing, relevant rules, regulation and specification. ii) Minimum cross section area of cpc in relation to the cross section area of associated phase conductor shall be install as per MS-IEC60364-5-54, Table 54.3 iii) For top floor and wiring above ceiling shall be in galvanised steel (G.S), heavy gauge, Class B, screw typed conduits and electrogalvanised sheet steel trunking. The trunking shall be supported by fixing brackets. All accessories shall be provided such as brass bush, elbow, flexible GS conduit, saddle, adaptor and etc for complete installation. Any other items which not mentioned in this section, shall be comply with the latest revision of CKE.LS.01.01.(04).2018 iv) All prices shall include the cost of conduits, trunking and any other accessories used for the wiring system. v) All concealed / surface conduit wiring shall use G.S conduit. vi) All wiring for Emergency Light & Keluar Sign shall be in G.S Conduit conduit is embedded in the concrete. vii) All trunking shall used Electrogalvanised Trunking. ix) Switches for lighting and fans shall generally be grouped. x) Switch plates of size 85mm x 85mm (max. allowable number of big rocker switches is 3) xi) Back boxes for switches and switched socket outlet shall be of galvanised sheet steel type of minimum thickness 0.8mm.				
<b>2.0</b>	<b>SURFACE GALVANISED STEEL CONDUIT WIRING</b>				
2.1	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC.	Nos.	6		
2.2	10A 1 Way SP <b>metalclad switch</b> c/w back box.	Nos.	2		
2.3	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC for self-contained emergency light.	Nos.	2		
2.4	Socket outlet point using 2 x 2.5 sq. mm PVC cable & CPC c/w 1 gang 13A 3 pin <b>metalclad</b> switched socket outlet (1450mm above finished floor level):	Nos.	4		
2.5	Exhaust fan point using 2 x 1.5 sq. mm PVC cable & CPC c/w ceiling rose (Interlock with lighting).	No.	1		
<b>3.0</b>	<b>LUMINAIRES AND EQUIPMENT</b>				
<b>3.1</b>	<b>INDOOR LED LUMINAIRES</b>				
<b>3.1.1</b>	<b>T8 LED LUMINAIRES</b>				
3.1.1.1	2 x (12 to 20watt) Ceiling Mounted Bare Channel c/w Self Ballasted Double Capped T8 LED Tube (1200mm, CCT 4000K).	Nos.	6		
<b>3.1.2</b>	<b>EMERGENCY LIGHT</b>				
3.1.2.1	Surface mounted LED emergency luminaire c/w 3 hours duration battery back-up (approved by Jabatan Bomba).	Nos.	2		
<b>4.0</b>	<b>SUBMAINS CABLES</b>				
	i) To supply, install, testing and commisioning submains cables as per drawing and specifications. ii) Submain Cable in electrogalvanised trunking c/w CPC, bracket, supports and other required accessories.				
5.1	<b>2 x 10 sq. mm PVC</b> cable in electrogalvanised trunking c/w CPC from: a) EMSB to DB 'ELP' (approximate length 10 meter).	Lump Sum	Lump Sum		
<b>6.0</b>	<b>DISTRIBUTION BOARD (DB)</b>				
	i) To supply, install, test and commission wall mounted Electrogalvanised DB's c/w bracket and including all cable terminations as per specification and drawing.				

6.1	6 Ways SPN DB 'ELP' at Bilik MSB.	Lot.	1		
(V)	<b>GARAJ BLACK MARIA</b>				
	As per drawing no.:- HQL.34/2021/LV/23(27)				
1.0	<b>WIRING</b>				
	<b>Notes:</b> i) All wiring shall be installed as per drawing, relevant rules, regulation and specification. ii) Minimum cross section area of cpc in relation to the cross section area of associated phase conductor shall be install as per MS-IEC60364-5-54, Table 54.3 iii) For top floor and wiring above ceiling shall be in galvanised steel (G.S), heavy gauge, Class B, screw typed conduits and electrogalvanised sheet steel trunking. The trunking shall be supported by fixing brackets. All accessories shall be provided such as brass bush, elbow, flexible GS conduit, saddle, adaptor and etc for complete installation. Any other items which not mentioned in this section, shall be comply with the latest revision of CKE.LS.01.01.(04).2018 iv) All prices shall include the cost of conduits, trunking and any other accessories used for the wiring system. v) All concealed / surface conduit wiring shall use G.S conduit. vi) All wiring for Emergency Light & Keluar Sign shall be in G.S Conduit conduit is embedded in the concrete. vii) All trunking shall used Electrogalvanised Trunking. ix) Switches for lighting and fans shall generally be grouped. x) Switch plates of size 85mm x 85mm (max. allowable number of big rocker switches is 3) xi) Back boxes for switches and switched socket outlet shall be of galvanised sheet steel type of minimum thickness 0.8mm.				
2.0	<b>SURFACE GALVANISED STEEL CONDUIT WIRING</b>				
2.1	Lighting point using 2 x 1.5 sq. mm PVC cable c/w CPC.	Nos.	3		
3.0	<b>LUMINAIRES AND EQUIPMENT</b>				
3.1	<b>T8 LED LUMINAIRES</b>				
3.1.1	1 x (12 to 20watt) <b>Ceiling Mounted Bare Channel</b> c/w Self Ballasted Double Capped T8 LED Tube (1200mm, CCT 4000K):	Nos.	3		
4.0	<b>TAP - OFF</b>				
4.1	Electrogalvanised Weatherproof type Tap-Off 'BM' (IP54) c/w cable gland, surface mounted E.G Trunking from electrical pit to Tap-Off at Garaj Black Maria.	Lot	1		
SUB-TOTAL FOR ITEM ( C )					
CARRIED TO RINGKASAN TENDER :					

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN  
LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**D) MAIN SWITCHBOARD, SUB SWITCHBOARD & POWER FACTOR CORRECTION BOARD**

(All quantities are PROVISIONAL)

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
<b>1.0</b>	<b>MAIN SWITCHBOARD (NON ESSENTIAL)</b>  As per drawing no.: HQL.34/2021/LV/07(27)  To supply, install, testing and commissioning Wall Mounted Electrogalvanised Main Switchboard (50kA @ 400V, 1sec) including all cable terminations as per specification and drawing.				
1.1	Main Switchboard <b>NMSB</b> at Bilik MSB.	Lot.	1		
<b>2.0</b>	<b>MAIN SWITCHBOARD (ESSENTIAL)</b>  As per drawing no.: HQL.34/2021/LV/07(27)  i) To supply, install, testing and commissioning Wall Mounted Electrogalvanised Main Switchboard (50kA @ 400V, 1sec) including all cable terminations as per specification and drawing.				
2.1	Main Switchboard <b>EMSB</b> at Bilik MSB.	Lot.	1		
<b>3.0</b>	<b>SUB SWITCHBOARD (NON ESSENTIAL)</b>  As per drawing no.: HQL.34/2021/LV/07(27) HQL.34/2021/LV/09(27)  i) To supply, install, testing and commissioning Wall Mounted Electrogalvanised Sub Switchboard (25kA @ 400V, 1sec) including all cable terminations as per specification and drawing.				
3.1	Sub Switchboard <b>SSB 'NE'</b> at Bilik Suis, Aras 1, Blok Pentadbiran.	Lot.	1		
3.2	Sub Switchboard <b>SSB 'NM'</b> at Bilik Suis, Aras 1, Blok Pentadbiran.	Lot.	1		
<b>4.0</b>	<b>SUB SWITCHBOARD (ESSENTIAL)</b>  As per drawing no.: HQL.34/2021/LV/07(27) HQL.34/2021/LV/09(27)  i) To supply, install, testing and commissioning Wall Mounted Electrogalvanised Sub Switchboard (25kA @ 400V, 1sec) including all cable terminations as per specification and drawing.				
4.1	Sub Switchboard <b>SSB 'E'</b> at Bilik Suis, Aras 1, Blok Pentadbiran.	Lot.	1		
<b>5.0</b>	<b>EARTHING SYSTEM</b>  As per drawing no.: HQL.34/2021/LV/07(27)				
5.1	<b>Protective conductor</b> 50mm x 6mm or 2 sets 2 x 25mm x 3mm tinned copper bar for Main Earthing Bar.	Lump Sum	Lump Sum		
5.2	50mm x 6mm tinned copper <b>Main Earthing Bar</b> c/w porcelain insulators to mount the main earthing bar and a transparent protective cover with label engraved and marked in red 'Main Earthing Bar - Safety Electrical Connections - Do Not Remove' to cover full length of the sub earthing bar <b>(MEB shall be Factory Ready)</b>	Lump Sum	Lump Sum		
5.3	<b>Main Protective Bonding</b> 25mm x 3mm copper tape.	Lump Sum	Lump Sum		



5.4	<b>Protective conductor</b> 25mm x 6mm tinned copper bar for Sub Earthing Bar.	Lump Sum	Lump Sum		
5.5	25mm x 6mm tinned copper <b>Sub Earthing Bar</b> c/w porcelain insulators to mount the main earthing bar and a transparent protective cover with label engraved and marked in red 'Main Earthing Bar - Safety Electrical Connections - Do Not Remove' to cover full length of the sub earthing bar <b>(SEB shall be Factory Ready)</b>	Lump Sum	Lump Sum		
5.6	<b>Earthing conductor</b> 2 x 25mm x 3mm copper tape.	Lump Sum	Lump Sum		
5.7	25mm x 3mm copper tape for <b>Telecommunication Bonding Conductor (TBC)</b> .	Lump Sum	Lump Sum		
5.8	<b>≥ 14mm dia.</b> x 3000mm (L) copper jacketed (minimum radial thickness 0.25mm) steel core earth electrode c/w precast heavy duty concrete earth chamber & removable concrete cover etc. Repeat if required ( $R < 3\Omega$ ).	Lots.	4		
5.9	Test lead 2.5 sq. mm green cable current probe & potential probe.	Lump Sum	Lump Sum		
5.10	<b>≥ 14mm dia.</b> x 1500mm (L) copper jacketed (minimum radial thickness 0.25mm) steel core earth electrode c/w precast heavy duty concrete earth chamber & removable concrete cover etc.  <b>Note:-</b> a) The connection of the copper tape to the earth electrode shall be exothermic welded connections.  b) The connection of the 2.5mm <sup>2</sup> green PVC cable to the earth electrode shall be by clamp.	Lots.	2		
6.0	<b>POWER FACTOR CORRECTION BOARD</b>  (Separate board placed beside the MSB) i) To supply, install, testing and commissioning Electrogalvanised cubicle type Floor Mounted (50kA @ 400V, 1sec) Form 2B Power Factor Correction Board as per specification and drawing.  As per drawing no.:- HQL.34/2021/LV/07(27) HQL.34/2021/LV/08(27)				
6.1	Power Factor Correction Board for NMSB ( <b>75 KVAR 8 steps</b> ) at Bilik MSB.	Lot.	1		
7.0	<b>TNB METER KIOSK</b>				
7.1	To supply and install LVCT Ground Mounted Meter Kiosk as per approved by TNB c/w tinned copper busbar, cut out & neutral link, CT and complete accessories etc. as per specification and drawing.  As per drawing no. and specification:- HQL.34/2021/LV/05(27) Latest TNB Electrical Supply Application Handbook (ESAH)	Lot.	1		
<b>SUB-TOTAL FOR ITEM ( D ) CARRIED TO RINGKASAN TENDER :</b>					

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN  
LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**E) STANDBY GENERATOR SET**

(All Quantities are Provisional and Subjected To Final Remeasurement)

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	The catalogues for Standby Genset shall be submitted for technical evaluation.  FAILURE to submit will render the tender to be DISQUALIFIED.  To supply, install, testing and commissioning to use as per drawing and specification.				
<b>1.0</b>	<b>AMF BOARD</b>				
1.1	Wall Mounted Eelctrogalvanised AMF Board, current transformers, Digital Power Meter (DPM), hour meter, kWh meter, control and indicator alarm, phase switch, microprocessor based feeder protection and bay control unit c/w CT, control relay fault alarm, cable box etc. as per specification and drawing. (50kA @ 400V, 1 Sec)  As per drawing no.:- HQL.34/2021/LV/07(27)	Lot.	1		
<b>2.0</b>	<b>STANDBY GENERATOR SET</b>				
2.1	<b>50kVA, 0.8 p.f, 3 Phase, 400V, 50Hz</b> system, starting system, protective and alarm system, anti vibration, absorption system (e.g. spring, rubber etc.), automatic shuttered louvre and other associated work as per specification and drawing.  As per drawing no.:- HQL.34/2021/LV/07(27)	Lot.	1		
2.2	24Vdc heavy duty Nickel Cadmium Battery of sufficient capacity (as recommended provide minimum of six (6) successive abortive starts of the engine without recharging shall be provided). The battery shall be equipped with external recombinators which are designed to effect recombination of oxygen and hydrogen to increase the intervals between topping up with distilled water to at least five years. A durable battery stand shall be supplied and installed.	Set	1		
2.3	Battery charger (stand alone unit) for Nickel Cadmium Battery. The unit shall be capable of: a) Continuous Charge 14 Amps b) Boost Charge 30 Amps a) Trickle Charge	Set	1		
2.4	Electric motor-driven pump for transferring fuel into the fuel tank c/w accessories, fuel valve, etc.	Lot.	1		
2.5	Manual fuel pump c/w accessories as per drawing and specification.	Lot.	1		
2.6	Tank c/w piping and other associated work as per drawing and specification.	Lot.	1		
2.7	To supply a full tank capacity of fuel at time of handover.	Lot.	1		
<b>3.0</b>	<b>CABLES</b>  As per drawing no.:- HQL.34/2021/LV/07(27)				
3.1	<b>4 x 1C 16 sq. mm MI/MS Fire Resistant</b> cable (insulated and sheated) on Perforated Hot Dipped Galvanised cable tray and termination from AMF Board to 50kVA Generator Set.	Lump Sum	Lump Sum		
3.2	<b>4 x 1C 16 sq. mm MI/MS Fire Resistant</b> cable (insulated and sheated) on Perforated Hot Dipped Galvanised cable tray c/w CPC and termination from EMSB to AMF Board.	Lump Sum	Lump Sum		

3.3	<b>4 x 16 sq. mm PVC</b> cable in electrogalvanised trunking from M&E interlocks to 60A TPN MCCB at MSB.	Lump Sum	Lump Sum		
3.4	Generator under voltage relay cable using <b>4 x 2.5 sq.mm M/MS Fire Resistant</b> cable on Perforated Hot Dipped Galvanised cable tray from EMSB to standby generator set as required.	Lump Sum	Lump Sum		
<b>4.0</b>	<b>ACOUSTIC TREATMENT</b>				
4.1	To supply and install a complete acoustic or noise reduction system for the generator and generator room c/w solid acoustic fire rated door (1 hours) with frame acoustic seals, hinge's lock set, primary and secondary exhaust silencers, inlet and outlet air attenuators for radiators to specification and requirement of Dept. of Environment. Shop drawings to be approved by S.O. prior installation.	Lump Sum	Lump Sum		
<b>5.0</b>	<b>GENERATOR SET EARTHING</b>				
	As per drawing no.:- HQL.34/2021/LV/07(27)				
5.1	<b>Protective conductor 25mm x 3mm tinned copper bar</b> from Frame to Genset Earthing Bar.	Lump Sum	Lump Sum		
5.2	25mm x 6mm tinned copper Genset Earthing Bar (Factory Ready) c/w porcelain insulators to mount the main earthing bar and a transparent protective cover with label engraved and marked in red "Main Earthing Bar - Safety Electrical Connections - Do Not Remove" to cover full length of the main earthing bar.	Lump Sum	Lump Sum		
5.3	<b>Main Protective Bonding</b> 25mm x 3mm tinned copper tape from MEB Genset to Main Earthing Bar NMSB.	Lump Sum	Lump Sum		
5.4	<b>Earthing conductor</b> 2 x 25mm x 3mm copper tape	Lump Sum	Lump Sum		
5.5	<b>≥14mm dia.</b> x 3000mm (L) copper jacketed (minimum radial thickness 0.25mm) steel core earth electrode c/w precast heavy duty concrete earth chamber & removable concrete cover etc.	Lots.	2		
	<b>Note:-</b> a) The connection of the copper tape to the earth electrode shall be exothermic welded connections. Repeat if required (R<20 ohm)				
<b>6.0</b>	<b>NEUTRAL TO EARTH</b>				
6.1	1 x 16 sq. mm PVC BLACK cable as per drawing from N-E to MEB Genset (Neutral to Earth).	Lump Sum	Lump Sum		
	As per drawing no.:- HQL.34/2021/LV/07(27)				
<b>7.0</b>	<b>SERVICE AND MAINTENANCE WORKS DURING DLP</b>				
7.1	To carry out service and maintenance works for Three Phase Generator Set during Defect Liability Period as per Specification for Three Phase Generator Set (LS-5 Appendix C - Schedule of Service and Maintenance).	Lump Sum	Lump Sum		
<b>SUB-TOTAL FOR ITEM ( E )</b>					
<b>CARRIED TO RINGKASAN TENDER :</b>					

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN  
LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**F) UNDERGROUND CABLES & EXTERNAL ELECTRICAL INFRASTRUCTURE**

(All Quantities are Provisional and Subjected To Final Remeasurement)

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	<p>To supply, install, testing and commissioning as per drawing and specifications.</p> <p>All quantities given are PROVISIONAL.</p> <p>The actual quantities installed shall be measured on site after completion and prices adjusted accordingly.</p> <p>All cable shall be handled, laid and installed accordingly to the specification. All prizes must included excavation of trenches, clean sand, ducting, cable markers, making good and etc. as per specification.</p> <p><b>Notes:</b></p> <p>i) Complete with Heat Shrinkable dry type cable termination / cable gland c/w earth tag washer and protective conductor.</p> <p>ii) If the cable size &gt;50 sq. mm, the cable termination shall be using Heat Shrinkable cable termination.</p> <p>iii) For Cable size ≤50 sq. mm, the cable termination shall be using Cable Gland c/w Earth Tag Washer and Protective Conductor.</p>				
<b>1.0</b>	<b>UNDERGROUND CABLES</b>				
	<p>i) To supply, install, testing and commissioning copper cables.</p> <p>As per drawing no.:- HQL.34/2021/LV/01(27) HQL.34/2021/LV/07(27)</p>				
1.1	<b>4C 120 sq. mm PVC/SWA/PVC</b> Underground Cable from:				
	a) LVCT Ground Mounted TNB Meter Kiosk to NMSB at Bilik MSB	Meter	20		
1.2	<b>4C 50 sq. mm XLPE/SWA/PVC</b> Underground Cable from:				
	a) NMSB at Bilik MSB to SSB 'NE' at Bilik Suis, Aras 1, Blok Pentadbiran	Meter	110		
1.3	<b>4C 95 sq. mm XLPE/SWA/PVC</b> Underground Cable from:				
	a) NMSB at Bilik MSB to SSB 'NM' at Bilik Suis, Aras 1, Blok Pentadbiran	Meter	110		
1.4	<b>4C 35 sq. mm XLPE/SWA/PVC</b> Underground Cable from:				
	a) EMSB at Bilik MSB to SSB 'E' at Bilik Suis, Aras 1, Blok Pentadbiran	Meter	110		
1.5	<b>4C 10 sq. mm PVC/SWA/PVC</b> Underground Cable from:				
	a) EMSB at Bilik MSB to DB 'ERP' at Rumah Pam	Meter	40		
1.6	<b>2C 6 sq. mm PVC/SWA/PVC</b> Underground Cable from:				
	a) EMSB at Bilik MSB to DB 'EPP' at Pondok Pengawal	Meter	20		
1.7	<b>4C 6 sq. mm PVC/SWA/PVC</b> Underground Cable from:				
	a) EMSB at Bilik MSB to 16A TPN Switch Disconnecter (Isolator) at Rumah SSTS	Meter	50		
<b>2.0</b>	<b>PIPE CROSSING / DUCTING</b>				
	As per drawing no.:- HQL.34/2021/LV/01(27)				

2.1	To supply and install <b>150mm dia. HDPE PN10 pipe</b> for road crossing, cable crossing hardstanding and tarmac area.	Meter	20		
SUB-TOTAL FOR ITEM ( F ) CARRIED TO RINGKASAN TENDER :					

PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN LOKAP AADK NEGERI PULAU PINANG

NO. TENDER : JKR/CKE/22199/2024

G) LIGHTNING PROTECTION SYSTEM

(All Quantities are Provisional and Subjected To Final Remeasurement)

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	To supply, install and testing as per drawing and specifications.  All quantities given are PROVISIONAL.  The actual quantities installed shall be measured on site after completion and prices adjusted accordingly.				
1.0	<b>LIGHTNING PROTECTION SYSTEM</b>				
i)	To supply, instal and test the lightning protection system as per specification and drawing.  As per drawing no.: HQL.34/2021/LV/24(27) HQL.34/2021/LV/25(27) HQL.34/2021/LV/26(27) HQL.34/2021/LV/27(27)				
1.1	25mm x 3mm aluminium tape c/w necessary supports, brackets, etc. for down conductor c/w 50mm x 25mm heavy duty uPVC ducting, 100mm x 100mm x 38mm uPVC box c/w cover and DC Tape Clip. Shall be concealed in RC column.	Lump Sum	Lump Sum		
1.2	25mm x 3mm copper tape c/w necessary supports, brackets, etc. for down conductor c/w 50mm x 25mm heavy duty uPVC ducting, 100mm x 100mm x 38mm PVC junction box c/w cover and DC Tape Clip. Shall be concealed in RC column	Lump Sum	Lump Sum		
1.3	Testing joint / Bimetalic Testing Joint	Nos.	8		
1.4	To supply and install Heavy duty inspection earth chamber with removable concrete cover c/w 14mm dia. x 3000mm length copper jacketed steel core earth electrodes (with exothermic welded connections). Repeat if required (R < 10 ohm)	Nos.	8		
SUB-TOTAL FOR ITEM ( G ) CARRIED TO RINGKASAN TENDER :					

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGensi ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**H) EXTERNAL LIGHTING**

(All quantities are PROVISIONAL)

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	<b>Important Notes:</b>  To supply, install, testing and commissioning the complete external lighting in accordance with details and as per specifications and drawing.  Catalogues, technical specification and data for offered equipment shall be submitted together with this tender.  Rates shall include for all operations necessary for the manufacture, testing, supply, delivery and installation of the lighting column etc as per drawings.				
<b>1.0</b>	<b>STREET LIGHTING</b>  As per drawing no.:- HQL.34/2021/LV/02(27) HQL.34/2021/LV/03(27)				
1.1	To supply and install Single Short Arm 8 meter height Flange Mounted Type Octagonal Hot Dipped Galvanised pole c/w steel column, two service door, slip joint, double slot hinged with door stiffener, internal wiring using 2.5sq.mm PVC/PVC cable c/w 2.5sq.mm PVC CPC other accessories as per specifications and drawings.	Nos.	17		
1.2	To supply and install concrete footing suitable to mount 8 meter height lighting column as per approval from C&S Consultant. The contractor shall confirm the size of the concrete footing with the street lighting column manufacturer (concrete footing for pole along the elevated structure, electrical contractor shall liaise with the main contractor).	Nos.	17		
1.3	Modular termination box (IP54) c/w cut-out fuse suitable for terminations up to 2 core 16sq.mm PVC/SWA/PVC cable c/w SPD (Imax ≥ 40kA).	Nos.	17		
1.4	To supply and install 150Watt LED luminaire with IP rating IP66 c/w built in driver, thermal management unit, Surge Protective Devices (SPD) and design for side entry, die cast aluminium alloy housing and other necessary accessories. (CCT = 3000K - 3200K).	Nos.	17		
<b>2.0</b>	<b>FENCE LIGHTING</b>  As per drawing no.:- HQL.34/2021/LV/02(27) HQL.34/2021/LV/04(27)				
2.1	To supply and install 30Watt LED E27 fence light luminaire (IP54) (CCT: 3000K) with Aluminium Die-Casting, Frosted PC Waterproof with min dimension 190mm (H) x 160mm (H) x 160mm c/w weatherproof electrogalvanised (IP54) junction box c/w 1.5mm sq PVC cable c/w CPC in heavy duty uPVC conduit, and other necessary accessories etc.  (Tenderer shall submit catalogue for approval)	Nos.	8		
<b>3.0</b>	<b>FLOOD LIGHT SIGNBOARD</b>  As per drawing no.:- HQL.34/2021/LV/02(27) HQL.34/2021/LV/04(27)				

3.1	To supply and install 50Watt LED floodlight luminaire (IP54) (CCT: 6500K). Minimum dimension 230mm (W) x 195mm (L) c/w concrete plinth with Hot Dipped Galvanised Cage and other necessary accessories etc.	Nos.	2		
<b>4.0</b>	<b>CONTROL BOARD</b>				
4.1	40A DP Electrogalvanised Control Board CB 'CL' at Bilik MSB. As per drawing no.:- HQL.34/2021/LV/02(27)	Lot	1		
<b>5.0</b>	<b>SUBMAIN CABLES</b>				
i)	To supply, install, testing and commissioning submains cables as per drawing and specifications.				
ii)	Submain Cable in Electrogalvanised Trunking c/w CPC, bracket, supports and other required accessories.  As per drawing no.:- HQL.34/2021/LV/02(27)				
5.1	<b>2 x 16 sq. mm PVC</b> cable in Electrogalvanised Trunking c/w CPC from: a) NMSB at Bilik MSB to CB 'CL' at Bilik MSB (approximate length 5 meter)	Lump Sum	Lump Sum		
<b>6.0</b>	<b>UNDERGROUND CABLES</b>				
i)	To supply, install, testing and commissioning copper cables.  As per drawing no.:- HQL.34/2021/LV/02(27)				
6.1	<b>2C 16 sq. mm PVC/SWA/PVC</b> Underground Cable from: a) CB 'CL' at Bilik MSB to Street Lighting	Meter	475		
6.2	<b>2C 6 sq. mm PVC/SWA/PVC</b> Underground Cable from: a) CB 'CL' at Bilik MSB to Fence Lighting	Meter	140		
6.3	<b>2C 6 sq. mm PVC/SWA/PVC</b> Underground Cable from: a) DB 'EPP' at Pondok Pengawal to Flood Light Signboard	Meter	30		
<b>7.0</b>	<b>PIPE CROSSING / DUCTING</b>  As per drawing no.:- HQL.34/2021/LV/02(27)				
7.1	To supply and install <b>150mm dia. HDPE PN10 pipe</b> for road crossing, cable crossing hardstanding and tarmac area.	Meter	60		
<b>SUB-TOTAL FOR ITEM ( H )</b> <b>CARRIED TO RINGKASAN TENDER :</b>					



**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGensi ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN  
LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**I) PUBLIC ADDRESS SYSTEM**

All quantities are PROVISIONAL. Actual quantities will be measured at site.

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	<p>All quantities given are PROVISIONAL. The actual quantity installed shall be measured on site after completion and prices adjusted accordingly.</p> <p>Manufacturer's catalogues and technical specification shall be submitted. Failure to do so may result in failure to comply to technical specifications.</p> <p>Contractor shall deemed to have examined the site.</p> <p>Works shall include all termination, labelling and interacking cablings within equipment rack c/w all necessary connectors, mountings and accessories.</p> <p>All network infrastructure cabling and related accessories shall be of type as approved in the JKR JMAL website.</p> <p>All cabling and wiring infrastructure works shall be referred to the current JKR Specification for Low Voltage Internal Electrical Installation (L-S1).</p>				
<b>1.0</b>	<b>CABLING</b>				
i)	All internal cabling shall be in G.S conduit/electrogalvanised (EG) trunking/hot-dipped galvanised (HDG) trunking.				
ii)	Wiring works (inclusive breaking, hacking, cutting hole, and making good, restoration, backfilling and permanent reinstatements of damage brickwall, etc. necessary for the installation of the system.				
iii)	All fibre and UTP cablings shall be tested according to the relevant standard (price are deemed to be inclusive of these works).				
iv)	All works carried out shall comply to the specifications and drawings.				
1.1	Loudspeaker point from equipment rack to ceiling speaker using 1 x 18 AWG twisted pair speaker cable c/w all necessary accessories.	Nos.	36		
1.2	Loudspeaker point from equipment rack to box speaker using 1 x 18 AWG twisted pair speaker cable c/w all necessary accessories.	Nos.	2		
1.3	Loudspeaker point from equipment rack to volume controller using 1 x 18 AWG twisted pair speaker cable & 2 x 1.5mm sq. PVC cable c/w all necessary accessories.	Nos.	16		
1.4	Cabling works from volume controller to ceiling speaker using 1 x 18 AWG twisted pair speaker cable c/w all necessary accessories.	Nos.	16		
1.5	Paging microphone point from equipment rack using CAT6 cable & 18 AWG twisted pair screened cable c/w connector and all necessary accessories.	No.	1		
<b>2.0</b>	<b>TO SUPPLY AND INSTALL</b>				
i)	All works carried out shall comply to the specifications and drawings.				

2.1	Preamplifier.	No.	1		
2.2	Emergency paging microphone.	No.	1		
2.3	Paging microphone.	No.	1		
2.4	120W 100V line power amplifier.	No.	1		
2.5	Amplifier monitoring unit.	No.	1		
2.6	6 channel zone selector (with all call).	No.	1		
2.7	100 AH 24VDC sealed lead acid battery c/w automatic battery charger.	No.	1		
2.8	24VDC regulated power supply unit for battery charger.	No.	1		
2.9	Automatic amplifier changeover unit.	No.	1		
2.10	Integrated Player c/w CD Player, USB & Tuner.	No.	1		
2.11	6W (tapping at 1.5W) 100V line ceiling loudspeaker c/w metal back enclosure, 1.6mm dia. low carbon galvanized steel wire, soffit cleat/wire hanger for suspension system and other necessary accessories.	Nos.	36		
2.12	6W (tapping at 1.5W) 100V line box loudspeaker.	Nos.	2		
2.13	10W volume controller.	Nos.	11		
2.14	Power Supply c/w all other necessary accessories as per drawing and specification	No.	1		
2.15	19" standard equipment rack to house all the Public Address equipment, power pack c/w mounting support, mounting bracket, ventilation panel, ventilation fan and all necessary accessories.	No.	1		
SUB-TOTAL FOR ITEM ( I )					
CARRIED TO RINGKASAN TENDER :					

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGensi ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN  
LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**J) CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM**

All quantities are PROVISIONAL. Actual quantities will be measured at site.

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	<p>All quantities given are PROVISIONAL. The actual quantity installed shall be measured on site after completion and prices adjusted accordingly.</p> <p>Manufacturer's catalogues and technical specification shall be submitted. Failure to do so may result in failure to comply to technical specifications.</p> <p>Contractor shall deemed to have examined the site.</p> <p>Works shall include all termination, labelling and interacking cablings within equipment rack c/w all necessary connectors, mountings and accessories.</p> <p>All network infrastructure cabling and related accessories shall be of type as approved in the JKR JMAL website.</p> <p>All cabling and wiring infrastructure works shall be referred to the current JKR Specification for Low Voltage Internal Electrical Installation (L-S1).</p>				
<b>1.0</b>	<b>CABLING</b>				
i)	All internal cabling shall be in G.S conduit/electrogalvanised (EG) trunking.				
ii)	Wiring works (inclusive breaking, hacking, cutting hole, and making good, restoration, backfilling and permanent reinstatements of damage brickwall, etc. necessary for the installation of the system.				
iii)	All fibre and UTP cablings shall be tested according to the relevant standard (price are deemed to be inclusive of these works).				
iv)	All works carried out shall comply to the specifications and drawings.				
1.1	Camera point using 1 x Jellyfilled CAT6 UTP cable partly in G.S conduit/trunking and underground ducting c/w connector and all necessary accessories.	Nos.	2		
<b>2.0</b>	<b>TO SUPPLY AND INSTALL</b>				
i)	All works carried out shall comply to the specifications and drawings.				
1.1	Ceiling recessed type varifocal IR dome camera c/w 1.6mm dia. low carbon galvanized steel wire, soffit cleat/ wire hanger for suspension system and other necessary accessories.	Nos.	2		
1.2	Surface mounted type varifocal IR dome camera c/w mounting box and other necessary accessories.	Nos.	7		
1.3	Varifocal IR bullet camera c/w mounting box and other necessary accessories.	Nos.	2		
1.4	Network video recorder (NVR) c/w 33TB storage capacity, CCTV management software and camera licenses.	Lot	1		
1.5	CCTV workstation c/w 22" LCD monitor, MS Office, antivirus software and other necessary equipment to ensure full functionality as per drawing and specification.	No.	1		

1.6	Display CPU for LED monitor c/w antivirus software and other necessary equipment to ensure full functionality as per drawing and specification.	No.	1		
1.7	42" LED monitor c/w display port to HDMI adapter, HDMI cables, bracket as per drawing and specification.	No.	1		
1.8	Wall bracket system for all the LED monitors. The bracket shall be made of epoxy painted sheet steel c/w tilt adjustment mechanism.	Lot	1		
1.9	CCTV operator table made of epoxy painted electrogalvanized sheet steel suitable for a minimum of 2 workstations with monitors and 2 person operation c/w 2 CPU compartments, 2 drawers and 2 nos swivel chairs.	Lot	1		
SUB-TOTAL FOR ITEM ( J ) CARRIED TO RINGKASAN TENDER :					

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**K) ELECTRONIC ACCESS CONTROL SYSTEM**

All quantities are PROVISIONAL. Actual quantities will be measured at site.

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	<p>All quantities given are PROVISIONAL. The actual quantity installed shall be measured on site after completion and prices adjusted accordingly.</p> <p>Manufacturer's catalogues and technical specification shall be submitted. Failure to do so may result in failure to comply to technical specifications.</p> <p>Contractor shall deemed to have examined the site.</p> <p>Works shall include all termination, labelling and interacking cablings within equipment rack c/w all necessary connectors, mountings and accessories.</p> <p>All network infrastructure cabling and related accessories shall be of type as approved in the JKR JMAL website.</p> <p>All cabling and wiring infrastructure works shall be referred to the current JKR Specification for Low Voltage Internal Electrical Installation (L-S1).</p>				
<b>1.0</b>	<b>CABLING</b>				
	<p>i) All internal cabling shall be in G.S conduit/ electrogalvanised (EG) trunking.</p> <p>ii) Wiring works (inclusive breaking, hacking, cutting hole, and making good, restoration, backfilling and permanent reinstatements of damage brickwall, etc. necessary for the installation of the system.</p> <p>iii) All fibre and UTP cablings shall be tested according to the relevant standard (price are deemed to be inclusive of these works).</p> <p>iv) All works carried out shall comply to the specifications and drawings.</p>				
1.1	System cabling using RS 485 shielded cable (no. of core to suit requirement) run in G.S conduit / underground G.I pipe from boom gate access controller to card readers c/w all necessary accessories.	Nos.	2		
1.2	System cabling using 1 x Jellyfilled CAT6 UTP cable partly in G.S conduit/trunking and underground ducting c/w connector and all necessary accessories from boom gate access controller to boom gate controller.	Nos.	2		
1.3	Loop sensor cable using multicore PVC cable c/w sealant.	Nos.	4		
1.4	System cabling works from up, stop and down push button to boom gate controller using 4C 2.5 mm sq. PVC/SWA/PVC underground cable partly in G.S conduit/trunking and underground ducting c/w all necessary accessories.	Lot	2		
1.5	System cabling using RS 485 shielded cable (no of core to suit requirement) from access controller to card readers, emergency break glass, electromagnetic lock and magnetic contact c/w all necessary accessories.	Nos.	8		
<b>2.0</b>	<b>TO SUPPLY AND INSTALL</b>				
	i) All works carried out shall comply to the specifications and drawings.				
2.1	Electronic access control management software.	Lot	1		

2.2	Desktop card reader.	No.	1		
2.3	Access controller c/w power supply, battery, enclosure as per drawing and specification.	Nos.	10		
2.4	Card reader.	Nos.	16		
2.5	Contactless smart card as per specification.	Nos.	20		
2.6	Emergency break glass.	Nos.	8		
2.7	Electromagnetic lock c/w mounting bracket.	Nos.	9		
2.8	Magnetic door sensor.	Nos.	9		
2.9	Keyswitch.	Nos.	8		
2.10	Boom gate system controller c/w electrogalvanised enclosure and concrete plinth.	Lot	2		
2.11	Heavy duty boom gate c/w 3.5 meter straight barrier gate arm.	Nos.	2		
2.12	Card reader.	Nos.	2		
2.13	Power supply surge protective device.	Nos.	4		
2.14	Data surge protective device.	Nos.	16		
2.15	Up, stop and down push button.	Nos.	2		
2.16	Single line loop detector.	Nos.	4		
2.17	Loop Coil.	Nos.	4		
SUB-TOTAL FOR ITEM ( K )					
CARRIED TO RINGKASAN TENDER :					

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGensi ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN  
LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**L) VISUAL SYSTEM (BILIK GERAKAN, ARAS DUA, BLOK PENTADBIRAN)**

All quantities are PROVISIONAL. Actual quantities will be measured at site.

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	<p>All quantities given are PROVISIONAL. The actual quantity installed shall be measured on site after completion and prices adjusted accordingly.</p> <p>Manufacturer's catalogues and technical specification shall be submitted. Failure to do so may result in failure to comply to technical specifications.</p> <p>Contractor shall deemed to have examined the site.</p> <p>Works shall include all termination, labelling and interacking cablings within equipment rack c/w all necessary connectors, mountings and accessories.</p> <p>All network infrastructure cabling and related accessories shall be of type as approved in the JKR JMAL website. In the event that the stated brand is not of the type approved in the JKR JMAL website, the contractor shall be required to change the brand appropriately without any cost implication.</p> <p>All cabling and wiring infrastructure works shall be referred to the current JKR Specification for Low Voltage Internal Electrical Installation (L-S1).</p>				
<b>1.0</b>	<b>CABLING</b>				
i)	All internal cabling shall be in G.S conduit/ electrogalvanised (EG) trunking.				
ii)	Wiring works (inclusive breaking, hacking, cutting hole, and making good, restoration, backfilling and permanent reinstatements of damage brickwall, etc. necessary for the installation of the system.				
iii)	All fibre and UTP cablings shall be tested according to the relevant standard (price are deemed to be inclusive of these works).				
iv)	All works carried out shall comply to the specifications and drawings.				
1.1	Cabling works using CAT 6 shielded twisted pair (STP) cable c/w connector and all other necessary accessories from HDMI receptacle panel to HDMI receiver.		1		
1.2	Cabling works using 2 x 4.0 sq. mm PVC cable c/w CPC and all necessary accessories from wall mounted 20A DP ON/OFF switch to 13A switch socket outlet.	Nos.	2		
1.3	Cabling works using 4 x 1.5 sq. mm PVC cable c/w CPC and all necessary accessories from motorised screen to UP/DOWN switch.	No.	1		
<b>2.0</b>	<b>SUPPLY AND INSTALL</b>				
i)	All works carried out shall comply to the specifications and drawings.				
2.1	HDMI receptacle panel c/w recessed box and other necessary accessories.	No.	1		
2.2	HDMI receiver c/w other necessary accessories as per drawing and specifications.	No.	1		
2.3	<b>3500 ANSI Lumens</b> LCD projector c/w pole, bracket and other necessary accessories as per drawing and specifications.	No.	1		

2.4	90"(W) x 56.2"(H) motorised screen (16:10) c/w mounting bracket, up/down switch button and other necessary accessories as per drawing and specifications.	No.	1		
2.5	Factory fitted HDMI cable.	No.	1		
2.6	Custom made enclosure c/w screw and labelled as projector service box as S.O Approval (IP20) as per drawing and specifications.	No.	1		
SUB-TOTAL FOR ITEM ( L ) CARRIED TO RINGKASAN TENDER :					



**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGensi ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN  
LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**M) VISUAL SYSTEM & SOUND REINFORCEMENT SYSTEM (DEWAN SERBAGUNA)**

All quantities are PROVISIONAL. Actual quantities will be measured at site.

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	<p>All quantities given are PROVISIONAL. The actual quantity installed shall be measured on site after completion and prices adjusted accordingly.</p> <p>Manufacturer's catalogues and technical specification shall be submitted. Failure to do so may result in failure to comply to technical specifications.</p> <p>Contractor shall deemed to have examined the site.</p> <p>Works shall include all termination, labelling and interacking cablings within equipment rack c/w all necessary connectors, mountings and accessories.</p> <p>All network infrastructure cabling and related accessories shall be of type as approved in the JKR JMAL website. In the event that the stated brand is not of the type approved in the JKR JMAL website, the contractor shall be required to change the brand appropriately without any cost implication.</p> <p>All cabling and wiring infrastructure works shall be referred to the current JKR Specification for Low Voltage Internal Electrical Installation (L-S1).</p>				
<b>1.0</b>	<b>CABLING</b>				
i)	All internal cabling shall be in G.S conduit/ electrogalvanised (EG) trunking.				
ii)	Wiring works (inclusive breaking, hacking, cutting hole, and making good, restoration, backfilling and permanent reinstatements of damage brickwall, etc. necessary for the installation of the system.				
iii)	All fibre and UTP cablings shall be tested according to the relevant standard (price are deemed to be inclusive of these works).				
iv)	All works carried out shall comply to the specifications and drawings.				
1.1	Cabling works using CAT 6 shielded twisted pair (STP) cable c/w connector and all other necessary accessories from HDMI switcher to HDMI receiver.	No.	1		
1.2	Cabling works using CAT 6 shielded twisted pair (STP) cable c/w connector and all other necessary accessories from HDMI receptacle panel to HDMI switcher.	Nos.	2		
1.3	Cabling works using HDMI cable c/w all other necessary accessories from HDMI receptacle panel to HDMI switcher.	Nos.	1		
1.4	Cabling works using 2 x 4.0 sq. mm PVC cable c/w CPC and all necessary accessories from wall mounted 20A DP ON/OFF switch to 13A switch socket outlet.	Nos.	2		
1.5	Cabling works using 4 x 1.5 sq. mm PVC cable c/w CPC and all necessary accessories from motorised screen to UP/DOWN switch.	No.	1		
1.6	Microphone point using 1 x 18 AWG twisted pair cable c/w all necessary accessories.	No.	1		
1.7	Cabling works using 1 x 18 AWG twisted pair cable and all necessary accessories from analog mixer to dual USB & MP3 player.	No.	1		
1.8	Cabling works using 1 x 18 AWG twisted pair cable and all necessary accessories from analog mixer to power amplifier.	Nos.	2		

1.9	Cabling works using 1 x 18 AWG twisted pair cable and all necessary accessories from power amplifier to full range	Nos.	2		
1.10	Cabling works using 1 x 18 AWG twisted pair cable and all necessary accessories from analog mixer to self-powered monitor	No.	1		
<b>2.0 SUPPLY AND INSTALL</b>					
i)	All works carried out shall comply to the specifications and				
2.1	HDMI receptacle panel c/w recessed box and other necessary accessories as per drawing and specifications.	Nos.	3		
2.2	HDMI receiver c/w other necessary accessories as per drawing and specifications.	No.	1		
2.3	<b>5000 ANSI Lumens</b> LCD projector c/w pole, bracket and other necessary accessories as per drawing and specifications.	No.	1		
2.4	<b>160"(W) x100"(H)</b> motorised screen (16:10) c/w mounting bracket, up/down switch button and other necessary accessories as per drawing and specifications.	No.	1		
2.5	Factory fitted HDMI cable.	No.	1		
2.6	Custom made enclosure c/w screw and labelled as projector service box as S.O Approval (IP20) as per drawing and specifications.	No.	1		
2.7	HDMI switcher.	No.	1		
2.8	16 Channel professional digital audio mixing console.	No.	1		
2.9	2 x 1000W @ 4 ohm dual channel DSP power amplifier.	Nos.	2		
2.10	15" 2-way co-axial full range loudspeaker with fully adjustable mounting bracket.	Nos.	2		
2.11	Self powered studio monitor loudspeaker.	No.	1		
2.12	Dual USB & MP3 player.	No.	1		
2.13	Dynamic handheld microphone c/w XLR connector and microphone cable of 10m length.	No.	1		
2.14	Wireless handheld microphone system c/w transmitter and true diversity receiver.	Nos.	2		
2.15	Microphone floor stand c/w boom arm and adaptor .	No.	1		
2.16	Microphone receptacle panel c/w XLR connector and back box.	No.	1		
2.17	19" standard floor mounted equipment rack to housing all equipment, c/w ventilation panels, blank panels, fans, switched socket outlet and accessories, lockable door, castor wheel and all other necessary accessories.	No.	1		
<b>SUB-TOTAL FOR ITEM ( M )</b>					
<b>CARRIED TO RINGKASAN TENDER :</b>					

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**N) PASSIVE INFRASTRUCTURE**

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
<b>1.0</b>	<b>STRUCTURED CABLING</b>				
<b>1.1</b>	<b>HORIZONTAL CABLING</b>				
1.1.1	Supply, install and terminate Network point with the following requirement:				
	i. Pathways: In electrogalvanised trunking Connecting pathway to down drop: Heavy Duty uPVC conduit				
	ii. Cable: UTP Cat 6A 23 AWG (EIA/TIA) Low Smoke Zero Halogen (LSZH) from patch panel to faceplate / equipment				
	iii. Outlet: Metalclad back box, 1 gang angular faceplate and modular RJ45 jack / 1 gang angular faceplate and modular RJ45 jack comply with underfloor finishing floor				
	a. Camera Point	Nos.	9		
	b. Access Controller Point	Nos.	8		
	c. Network Point	Nos.	46		
	d. Telephone Point	Nos.	45		
	e. Access Point	Nos.	4		
	e. Network Printer Point	Nos.	2		
1.1.2	Supply and install UTP Cat 6A 23 AWG (EIA/TIA) Low Smoke Zero Halogen (LSZH) factory terminated patch cords c/w RJ45 connectors and				
	a. 2.0 meter (patch panel to network switch)	Nos.	17		
	b. 1.5 meter (faceplate to end device)	Nos.	97		
<b>1.2</b>	<b>BACKBONE CABLING</b>				
<b>1.2.1</b>	<b>FIBRE OPTIC CABLE (Outdoor)</b>				
1.2.1.1	Supply, install, test and commission <b>Singlemode</b> outdoor corrugated steel-armoured fibre optics cable with the following requirements:				
	i. Type: OS2 singlemode outdoor armoured fibre optics cable. All core shall be terminated to the patch panel.				
	ii. Installation shall be partly in electrogalvanised trunking.				
	8 core from <b>fibre optic patch panel at Bilik TCR, Aras Satu, Blok Pentadbiran to fibre optic patch panel at:</b>				
	a. Pondok Pengawal	Meter	220		
1.2.1.2	Termination of 8 core OS2 Singlemode outdoor armoured fibre optic cable c/w pigtail and splicing cassette	Nos.	16		
<b>1.2.2</b>	<b>FIBRE OPTIC CABLE (Indoor)</b>				
1.2.2.1	Supply, install and terminate <b>Multimode</b> indoor fibre optic cable with the following requirements:				
	i. Type: Minimum OM4 multimode indoor fibre optic cable. All core shall be terminated to the Fibre Optic patch panel.				
	ii. Installation shall be partly in electrogalvanised trunking.				
	8 core from <b>fibre optic patch panel at Bilik TCR, Aras 1, Blok Pentadbiran to fibre optic patch panel at:</b>				
	a. Bilik TCR, Aras 2, Blok Pentadbiran	Meter	10		
1.2.2.2	Termination of 8 core OM4 Multimode indoor optic c/w pigtail and splicing cassette	Nos.	16		
1.2.2.3	Supply, install and terminate <b>Singlemode</b> indoor fibre optic cable with the following requirements:				
	i. Type: Minimum OS2 singlemode indoor fibre optic cable. All core shall be terminated to the Fibre Optic patch panel.				
	ii. Installation shall be partly in electrogalvanised trunking.				
	8 core from <b>FTB ISP at Bilik SDF, Aras 1, Blok Pentadbiran to fibre optic patch panel at:</b>				
	a. Bilik TCR, Aras 1, Blok Pentadbiran	Meter	10		
1.2.2.4	Termination of 8 core OS2 Singlemode indoor optic c/w pigtail and splicing cassette	Nos.	16		

1.2.2.5	8 core from <b>FTB Multiline SIP</b> at <b>Bilik SDF, Aras 1, Blok Pentadbiran</b> to fibre optic patch panel at:				
	a. Bilik TCR, Aras 1, Blok Pentadbiran	Meter	10		
1.2.2.6	Termination of 8 core OS2 Singlemode indoor optic c/w pigtail and splicing cassette	Nos.	16		
<b>1.3</b>	<b>FIBRE OPTIC PATCH CORD</b>				
1.3.1	Supply and install <b>3.0 metre</b> length 1 pair <b>OM4</b> factory terminated patch cord	Nos.	2		
1.3.2	Supply and install <b>3.0 metre</b> length 1 pair <b>OS2</b> factory terminated patch cord	Nos.	2		
<b>2.0</b>	<b>EQUIPMENT RACK</b>				
	Supply and install 19" Equipment Rack with the following requirements:				
	i. Cable Management Units and Blank Plate (Please refer to Rack Population Drawing)				
	ii. Perforated 1.5mm panel, frame thickness of 2mm				
<b>2.1</b>	<b>Wall Mounted Network Rack</b>				
	<b>Size: 15U network rack (Please refer to Rack Population drawing)</b>	Lots	2		
	a. Dimensions: Min. 600mm (w) x 800mm (d)				
	b. Power Distribution Unit (Factory Fabricated): 3 Nos 13A SSO				
<b>2.2</b>	<b>Network Rack</b>				
	<b>Size: 42U equipment rack (Please refer to Rack Population drawing)</b>	Lots	2		
	a. Dimensions: Min. 800mm (w) x 1000mm (d)				
	b. Power Distribution Unit (Factory Fabricated): 2 x C13 socket outlet (32A) (Left and Right)				
<b>2.3</b>	<b>UTP Patch Panel</b>				
	To supply and install <b>24 port</b> Cat 6A (EIA/TIA) rackmountable patch panel c/w cable support and cable management	Nos.	9		
<b>2.4</b>	<b>Fibre Optic Patch Panel</b>				
	To supply and install <b>12 port</b> Fibre Optic Panel c/w duplex for singlemode fibre optic cable	Nos.	3		
<b>SUB-TOTAL FOR ITEM ( N )</b>					
<b>CARRIED TO RINGKASAN TENDER :</b>					

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGensi ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN  
LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**O) ACTIVE INFRASTRUCTURE**

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	Supply, install, configure, testing and commissioning all the equipment rack using the latest image software, redundant power supply and complete quarantine functionality as per specification. Please refer to SOA, Compliance statement and Network Schematic Diagram to understand the detail design. <b>All the active shall be onsite 8 x 5 x NBD (8 Hours, 5 Days Next Business Day Service Level) support service during DLP and Warranty for 3 Years of the delivery date.</b>				
<b>1.0</b>	<b>FIREWALL</b>				
1.1	Supply, install and configure firewall, antivirus, anti-malware, intrusion prevention system (IPS), network security and web security. The Firewall shall comply with the minimum following requirement:	No.	1		
	a. Firewall Throughput: 5 Gbps				
	b. VPN Tunnel/Throughput: 2 nos/1.5 Gbps				
	c. IPS Throughput: 1.5 Gbps				
	d. Antivirus Throughput: 1.0 Gbps				
	e. Concurrent connections: 3,000,000				
<b>2.0</b>	<b>CORE SWITCH</b>				
2.1	Supply, install and configure fully managed Core Switch c/w accessories with the following minimum requirements:	No.	1		
	a. Switching capacity is up to 900 Gbps				
	b. Forwarding rate is up to 700Mpps				
	c. Layer 2/3/4 Switching				
	d. 24-port 1 GbE Base-T				
	e. Support 4 port 1/10GbE				
<b>3.0</b>	<b>ACCESS SWITCH POE+</b>				
3.1	Supply, install, and configure <b>24-port</b> stackable Layer 2 switching Access Switch with the following minimum requirements:	Nos.	6		
	a. 24-port 1000 Base-T (Ethernet)				
	b. Switching capacity is 128 Gbps				
	c. Forwarding rate is 95.2 Mpps				
	d. POE or POE+ switch 24 port				
	e. 4 ports SFP+ fixed 1/10 GbE				
	f. 10Gb Stacking module c/w cable				
3.2	Supply, install, and configure <b>8-port</b> stackable Layer 2 switching Access Switch with the following minimum requirements:	Nos.	2		
	a. 8-port 1000 Base-T (Ethernet)				
	b. Switching capacity is 128 Gbps				
	c. Forwarding rate is 95.2 Mpps				
	d. POE or POE+ switch 24 port				
	e. 2 ports SFP+ fixed 1/10 GbE				
	f. 10Gb Stacking module c/w cable				
<b>4.0</b>	<b>TRANSCEIVER MODULE</b>				
4.1	10G Base-SR SFP+ Transceiver module with LC connector	Nos.	4		
4.2	10G Base-LR SFP+ Transceiver module with LC connector	Nos.	2		
<b>5.0</b>	<b>WIRELESS ACCESS POINT</b>				
5.1	Supply, install and configure Wireless Access Point c/w antenna, mounting bracket, cable and necessary accessories etc for full functionality with following requirements:	Nos.	4		
	a. 802.11a/b/g/n/ac/ax networks WiFi standard with appropriate license				
	b. Power Over Ethernet (POE)				
	c. AP bracket shall be hung with mounting steel rod to the the floor slab / direct mounted on the wall.				
	d. Lockable				
<b>6.0</b>	<b>UNINTERRUPTIBLE POWER SUPPLY (UPS)</b>				
6.1	Supply and install 1.0kVA rack mount UPS c/w 30 minutes full load with 50% battery discharge with SNMP enable and 15A power cable for 15A 3 pin switched socket outlet.	No.	2		
6.2	Supply and install 2.0kVA rack mount UPS c/w 30 minutes full load with 50% battery discharge with SNMP enable and 15A power cable for 15A 3 pin switched socket outlet.	Nos.	1		

6.3	Supply and install 5.0kVA rack mount UPS c/w 30 minutes full load with 50% battery discharge with SNMP enable and 15A power cable for 15A 3 pin switched socket outlet.	Nos.	1		
SUB-TOTAL FOR ITEM ( O ) CARRIED TO RINGKASAN TENDER :					

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGensi ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN  
LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**P) TELEPHONE SYSTEM**

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	Supply of material, construct the complete telephones systems as per drawings and scope of works & accordance to the requirements and specification of JKR/ TELCO ( Refer to drawing). <i>All shall must be done by registered contractor with TMB</i> . To liase on and coordinate with TM's technical and sales team for the application of a new Multiline Session Initiation Protocol (SIP)/ direct line as per S.O representative instruction and TELCO requirement. The Multiline SIP line shall be connected to the new IP PBX.				
<b>1.0</b>	<b>IP PBX SYSTEM</b>				
1.1	To supply, install and configure IP PBX for <b>Small Business</b> up to 150 number c/w required licensing, SIP Gateway that shall be configured c/w licenses, cablings and accessories as per technical compliance and specification:				
	a. min. 60 number of user license	Lot	1		
	b. min. 16 number of channel license				
	c. Call Billing system (Web Searchable User Interface)				
	d. Inclusive service maintenance, Factory Acceptance Test, Testing & Commissioning. Onsite 8x5xNBD (8 Hours, 5 Days NDxt Business Day Service Level) maintenance service during DLP and Warranty for 3 Years				
<b>2.0</b>	<b>OPERATOR SYSTEM</b>				
2.1	To install and configure operator system with the following specification c/w licensing needed and/or other necessary accessories, 1 years onsite or approve equivalent to comply with requirement as below:				
	<b>Operator Console &amp; PC Based</b>	Lot	1		
	a. 50 numbers of dedicated line				
	b. <b>Hard phone</b> terminal				
	c. Operating System: Latest Windows Server or Linux				
	d. Storage retention: report, call history, call recording for 7 years				
	e. Inclusive service maintenance, Factory Acceptance Test, Testing & Commissioning. Onsite 8x5xNBD (8 Hours, 5 Days NDxt Business Day Service Level) maintenance service during DLP and Warranty for 3 Years				
<b>3.0</b>	<b>TELEPHONE SET</b>				
3.1	To supply, install and configure telephone set with the following specification c/w required licensing, cablings and/ or other necessary accessories, 1 year onsite or approve equivalent to comply with requirement as below:				
	a. Basic IP Phone	Nos	50		
<b>4.0</b>	<b>EXTERNAL INFRASTRUCTURE</b>				
	Supply of material, construct the complete infrastructure of telephones systems as per drawings and scope of works & accordance to the requirements and specifications of JKR/TELEKOM (refer to drawing). All works shall be done by registered contractors with TMB.				
4.1	To supply and install of TELCO point chamber/box inclusive of duct seal, cover cable bearer and brackets as per specification. Manholes, handholes and joint boxes including excavation, internal fitting, back filling with suitable materials, compaction and disposal of surplus materials				
	a. JC9	Lot	5		
	b. JB30	Lot	2		
4.2	Supply and install the following telephone ducts including subduct / innerduct, excavation works, backfilling and guide rope as per Telco specifications and requirements				
	a. 2 way 100mm dia. Telephone Duct Pipe	Meter	280		
	b. 4 way 100mm dia. Telephone Duct Pipe	Meter	80		
	c. 2 way 100mm GI pipe	Meter	25		
	d. 2 way 150mm GI pipe	Meter	40		
	e. 4 way 150mm GI pipe	Meter	10		
	f. 4 Way 150mm Dia. PN10 HDPE Pipe (HDD Method)	Meter	20		
<b>SUB-TOTAL FOR ITEM ( P ) CARRIED TO RINGKASAN TENDER :</b>					

PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN LOKAP AADK NEGERI PULAU PINANG

NO. TENDER : JKR/CKE/22199/2024

Q) EARTHING SYSTEM

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	a. It accordance to recommendations contains in IEC 30129, ANSI/TIA/EIA 607 and IEC 60364 Telecommunication Bonding and Earthing Standard for <b>all equipment rack in SDF, TCR, all Distribution Frame/ Panels and Telephone System.</b>	Lump Sum	Lump Sum		
	b. Installation shall comply with JKR Specification (L-S38)				
	c. Brand shall be comply with JKR Electrical Material Approved List (jMAL)				
	d. Please refer to drawing for details information				
1.0	To supply, install, testing and commissioning as per JKR specification of earthing system c/w 2 Nos earthing conductor copper tape 25mm x 3mm copper tape (for Telecommunication Bonding Conductor (TBC) and Telecommunications Bonding Backbone (TBB)), 25mm x 6mm copper as Primary Bonding Bar, 25mm x 6mm copper as Secondary Bonding Bar, 16 sq.mm earth cable Rack Bonding Conductor RBC, Rack Bonding Terminal (RBT).				
SUB-TOTAL FOR ITEM ( Q ) CARRIED TO RINGKASAN TENDER :					



PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN LOKAP AADK NEGERI PULAU PINANG

NO. TENDER : JKR/CKE/22199/2024

R) TESTING & COMMISSIONING

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
1.0	Testing and commissioning the following systems and guarantee full functionality of the system during defect and liability period as per scope of works & according to the requirements and specifications of JKR. (Contractor need to carry out pre-T&C for all the systems and submit the test results to JKR before T&C with JKR)				
1.1	Structure Cabling System Test by using Fluke Tester min model DSX5000	Lump sum	Lump sum		
1.2	Network Equipment Test	Lump sum	Lump sum		
1.3	Telephone System Test	Lump sum	Lump sum		
SUB-TOTAL FOR ITEM ( R ) CARRIED TO RINGKASAN TENDER :					

PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN LOKAP AADK NEGERI PULAU PINANG

NO. TENDER : JKR/CKE/22199/2024

S) OTHERS

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
1.0	TRAINING				
1.1	To organize and arrange formal and hands-on training sessions with the following requirements:				
	a. Networking Technology - Introduction & Intermediate	Pax	1		
	b. Network System Configuration, Operation and Maintenance	Pax	1		
	c. Telephone System Configuration, Operation and Maintenance	Pax	1		
SUB-TOTAL FOR ITEM ( S )					
CARRIED TO RINGKASAN TENDER :					

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN  
LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**T) MISCELLANEOUS**

(All Quantities are Provisional and Subjected To Final Remeasurement)

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE (RM)	AMOUNT (RM)
<b>1.0</b>	<b>DUCT SEALS</b>				
1.1	To supply and install duct seal for all cable entry to all buildings.	Lump Sum	Lump Sum		
<b>2.0</b>	<b>FIRE BARRIERS</b>				
2.1	Supply and install fire barriers for minimum two (2) hours fire rating as per Jabatan Bomba requirement and UBBL to cover all floor/wall openings and Riser Rooms for cable access using 100mm thick mineral wool and 12mm thick non-sag self-leveling fire stop sealant and accessories to UL standards.	Lump Sum	Lump Sum		
<b>3.0</b>	<b>HACKING AND MAKING GOOD</b>				
3.1	Breaking, hacking, cutting holes / coring and making good, restoration, backfilling and permanent reinstatements of damaged brickwall, roads, drains, hardstandings, tarmac area, IBS panel other civil works, etc. necessary for the installation of the system.	Lump Sum	Lump Sum		
<b>4.0</b>	<b>SWITCHROOM</b>				
	To provide switchroom peripherals, labels and signages as follows :-				
4.1	<b>Bilik MSB</b> a) Signage 'Bilik Suis Utama' at MSB room b) 'Dilarang Masuk', 'Bahaya', 'Dilarang Merokok' at MSB room c) Rubber mats of thickness not less than 6mm & 1000mm width in front of full length of switchboard d) CPR/Shock treatment chart e) Alat melawan kebakaran : 5kg CO2 ( 1 no.) f) Electrical Layout and Schematic Diagram g) To provide circuits numbering system and laminating/frame for As-Installed Layout Plans, Schematic Wiring Diagram, plans showing cable routes, positions of earthing point	Lump Sum	Lump Sum		
4.2	<b>Bilik Suis / Bilik SDF / Bilik TCR</b> a) Signage 'Bilik Suis', 'Bilik SDF' and 'Bilik TCR' b) 'Dilarang Masuk', 'Bahaya', 'Dilarang Merokok' c) Rubber mat of thickness not less than 6mm & 1000mm width in front of full length of switchboard d) Electrical Layout and Schematic Diagram	Lump Sum	Lump Sum		
<b>5.0</b>	<b>ASSET TAGGING, LABELING / CIRCUIT TAGGING AND REGISTRATION</b>				
5.1	To provide labeling at faceplate and circuit tagging at DB's.	Lump Sum	Lump Sum		
5.2	Asset labelling and tagging for all equipments, devices and rack using printed label, permanent marker and approved permanent paint for "HAK KERAJAAN MALAYSIA" label				
5.3	To provide and install labelling of faceplate, Distribution Frame, patch panel, fibre cabling, equipment rack and telephone system as specified in JKR Specification L-S38 and L-S16				
5.4	Asset Registration Works				
5.5	Shall submit 4 sets hardcopy and digital copy in the form of Microsoft Word/MS Excel files of the following:				
5.5.1	Label identification layout plan drawings using 'SKATA room naming convention' in hard cover binding.				

5.5.2	Assest Information's form (D.A.3 -D.A.6) & template (MS Excel) format as approved by S.O./P.D.				
5.5.3	List of DAK Komponen in each room (as per Borang D.A. 7 in Garis Panduan Pengumpulan Data & Pelabelan Aset TaH Alih (PeDATA): Aset Bangunan. A copy of this form should also be attached at each room during T&C for JKR's verification purposes.				
5.6	Shall be compile the asset informations as per requirement of latest version Garis Panduan Pengumpulan Data & Pelabelan Aset Tak Alih (PeData): Aset Bangunan for the approval of the S.O./P.D.				
<b>6.0</b>	<b>SUPPORT SYSTEM FOR TRUNKING AND CONDUIT IN CEILING SPACE UNDER THE ROOF</b>				
6.1	To supply and install steel purlin/beam c/w all connections and fittings as required. The trunking and conduit shall be supported by brackets at intervals as per L-S1 specification.	Lump Sum	Lump Sum		
<b>7.0</b>	<b>CLEAN SAND</b>				
7.1	All trenches in switchrooms shall filled up with clean sand to a level above cable ducts.	Lump Sum	Lump Sum		
<b>8.0</b>	<b>TESTING</b>				
8.1	To inspect and carry out testing for all wiring installations: a) Insulation Resistance and Continuity Tests b) Earth Electrode Resistance Tests c) RCD Tests d) Phase Sequence Tests e) ELV Equipments Tests	Lump Sum	Lump Sum		
8.2	All the test result must be submitted to S.O Representative with endorsed by Authorised Person				
<b>9.0</b>	<b>TRAINING</b>				
9.1	Comprehensive training as per specification for: a) Users training, operation for all electrical system LV and ELV system. b) Principle operation and maintenance prosedure for electrical system	Lump Sum	Lump Sum		
<b>SUB-TOTAL FOR ITEM ( T ) CARRIED TO RINGKASAN TENDER :</b>					

**PEMASANGAN ELEKTRIK UNTUK PEMBINAAN PEJABAT DAERAH AGENSI ANTIDADAH KEBANGSAAN SEBERANG PERAI SELATAN DAN  
LOKAP AADK NEGERI PULAU PINANG**

**NO. TENDER : JKR/CKE/22199/2024**

**SENARAI JENAMA BAHAN DAN PENGILANG**

ITEM	MATERIALS	BRAND	COUNTRY OF MANUFACTURE	MODEL
<b>1.0</b>	<b>LV MAIN SWITCH BOARDS/POWER FACTOR</b>			
	<b>CORRECTION BOARDS/ SUB SWITCH BOARDS/</b>			
	<b>FEEDER PILLAR/ DISTRIBUTION BOARDS,</b>			
	<b>FIREMAN RELAY AND ACCESSORIES.</b>			
	<b>(Other items please itemize)</b>			
1.1	Main Switchboard (MSB) (Form 2B, 50kA@400V, 1 sec)			
1.2	Sub Switchboard (SSB) (25kA@400V, 1 sec)			
1.3	Distribution Board (DB)			
1.4	Control Board (CB)			
1.5	Earth Leakage Relay (ELR)			
1.6	Surge Protective Device (SPD)			
1.7	Moulded Case Circuit Breaker (MCCB)			
1.8	Miniature Circuit Breaker (MCB)			
1.9	Residual Current Operated Circuit Breaker (RCCB)			
1.10	Power Factor Correction Board			
1.11	Power Factor Controller			
1.12	Capacitor For Power Factor Correction			
1.13	50kVA Generator Set			
<b>2.0</b>	<b>EARTHING &amp; LIGHTNING PROTECTION SYSTEM</b>			
	<b>(Other items please itemize)</b>			
2.1	Aluminium Tape			
2.2	Copper Tape			
2.3	Earth Chamber			
2.4	Exothermic Weld			
2.5	DC Tape Clip			
2.6	Test Clamp			
2.7	Earth Electrode			
2.8	Air Terminal			
2.9	Test Joint			
2.10	Heavy Duty uPVC Ducting			
<b>3.0</b>	<b>COPPER CABLE &amp; ACCESSORIES</b>			
	<b>(Other items please itemize)</b>			
3.1	PVC/SWA/PVC Cable			
3.2	XLPE/SWA/PVC Cable			
3.3	XLPE/PVC Cable			
3.4	PVC Cable			
3.5	MIMS Fire Resistance Cable			
3.6	Galvanised Steel Conduit			
3.7	Cable Tray			
3.8	Cable Trunking			
3.9	Heavy Duty uPVC Conduit			
<b>4.0</b>	<b>SWITCHES, SOCKETS AND ACCESSORIES</b>			
	<b>(Other items please itemize)</b>			
4.1	10A 1 Way / 2 Way SP Big Rocker Switch			
4.2	10A 1 Way SP Metalclad Switch			
4.3	10A 1 Way SP Big Rocker Switch (OKU Toilet)			
4.4	20A 1 Way DP Big Rocker Switch			
4.5	20A 1 Way DP Big Rocker Switch With Indicator Light			
4.6	13A 3 Pin Switched Socket Outlet			
4.7	15A 3 Pin Switched Socket Outlet			
4.8	Polycarbonate Switch Disconnecter (Isolator)			
4.9	Metalclad Switch Disconnecter (Isolator)			

<b>5.0</b>	<b>INDOOR LUMINAIRES &amp; ACCESSORIES</b>			
	<b>(Other items please itemize)</b>			
5.1	Keluar Sign			
5.2	Emergency Light			
5.3	LED Downlight			
5.4	T8 LED Self Ballasted Double Capped Recessed Mounted Luminaire c/w Aluminium Reflector Louvre			
5.5	1 x 38W Prison Light			
5.6	T8 LED Tube Self Ballasted Double Capped Wall / Surface Mounted Bare Channel			
5.7	T8 LED Tube Self Ballasted Double Capped Wall / Surface Mounted Bare Channel Weatherproof Type			
<b>6.0</b>	<b>WEATHERPROOF OUTDOOR LUMINAIRE &amp; ACCESSORIES</b>			
	<b>(Please itemize)</b>			
6.1	LED Floodlight Luminaire			
6.2	LED Street Lighting			
6.3	Single Arm 8m height Flange Mounted Type Octagonal Tapered HDG Pole			
6.4	LED Fence Lighting			
<b>7.0</b>	<b>FAN</b>			
	<b>(Other items please itemize)</b>			
7.1	400mm Dia. Wall Fan			
7.2	500mm Dia. Industrial Wall Fan			
7.3	Exhaust Fan			
<b>8.0</b>	<b>UNDERFLOOR DUCTING SYSTEM</b>			
	<b>(Other items please itemize)</b>			
8.1	3 Compartments Underfloor Service Box			
8.2	3 Compartments Underfloor Junction Box			
8.3	3 Compartments Vertical Access Box			
8.4	3 Compartments Heavy Duty uPVC Ducting			
<b>9.0</b>	<b>CCTV SYSTEM</b>			
	<b>(Other items please itemize)</b>			
9.1	Varifocal IR Dome Camera			
9.2	Varifocal IR Bullet Camera			
9.3	Network Video Recorder (NVR)			
9.4	CCTV Workstation			
9.5	Display CPU For LED Monitor			
9.6	LED Monitor			
9.7	CCTV Operator Table			
9.8	1 x Jellyfield Cat 6 UTP Cable			
<b>10.0</b>	<b>ELECTRONIC ACCESS CONTROL SYSTEM</b>			
	<b>(Other items please itemize)</b>			
10.1	Electronic Access Control Management Software			
10.2	Dekstop Card Reader			
10.3	Access Controller			
10.4	Card Reader			
10.5	Contactless Smart Card			
10.6	Emergency Break Glass			
10.7	Electromagnetic Lock			
10.8	Magnetic Door Sensor			
10.9	Boom Gate Controller			
10.10	Heavy Duty Boom Gate - 3.5m Barrier Boom Gate Arm			
10.11	Surge Protective Device			
10.12	Up, Stop and Down Push Button			
10.13	Loop Detector			
10.14	RS 485 Shielded Cable			

<b>11.0</b>	<b>VISUAL SYSTEM</b>			
	<b>(Other items please itemize)</b>			
11.1	HDMI Receptacle Panel			
11.2	HDMI Receiver			
11.3	3500 ANSI Lumens LCD Projector			
11.4	5000 ANSI Lumens LCD Projector			
11.4	90" (W) x 56.2" (H) Motorised Screen			
11.5	160" (W) x 100" (H) Motorised Screen			
11.6	Cat 5E Shielded Twisted Pair (STP) Cable			
11.7	HDMI Cable			
<b>12.0</b>	<b>PUBLIC ADDRESS SYSTEM</b>			
	<b>(Other items please itemize)</b>			
12.1	Preamplifier			
12.2	Paging Microphone			
12.3	Emergency Paging Microphone			
12.4	120W Power Amplifier			
12.5	Amplifier Monitoring Unit			
12.6	Line Selector			
12.7	Automatic amplifier changeover unit.			
12.8	24Vdc Battery Charger			
12.9	CD / Tuner / USB MP3 Player			
12.10	6W Ceiling Speaker			
12.11	6W Box Speaker			
12.12	Volume Controller			
12.13	Cat6 UTP Cable			
12.14	Twisted Pair Cable			
<b>13.0</b>	<b>SOUND REINFORCEMENT SYSTEM</b>			
	<b>(Other items please itemize)</b>			
13.1	Digital Mixer			
13.2	Media Presentation Scaler			
13.3	Power Amplifier			
13.4	Dual USB & MP3 Player			
13.5	Wireless Microphone			
13.6	Self Powered Studio Monitor Loudspeaker			
13.7	Full Range Loudspeaker			
13.8	AWG Screen Cable			
13.9	Twisted Pair Cable			
<b>14.0</b>	<b>PASSIVE INFRASTRUCTURE</b>			
	<b>(Other items please itemize)</b>			
14.1	UTP / STP Cat 6A			
14.2	1 Gang Angular Faceplate and Modular RJ45 Jack			
14.3	OS2 Singlemode Outdoor Armoured Fibre Optic Cable			
14.4	OM4 Multimode Indoor Fibre Optic Cable			
14.5	Fibre Optic Patch Cord			
14.6	Equipment Rack			
14.7	UTP Patch Panel			
14.8	Fibre Optic Patch Panel			
<b>15.0</b>	<b>ACTIVE INFRASTRUCTURE</b>			
	<b>(Other items please itemize)</b>			
15.1	Firewall			
15.2	Core Switch POE / POE+			
15.3	Access Switch POE / POE+			
15.4	Transceiver Module			
15.5	Wireless Access Point			
15.6	Uninterruptable Power Supply (UPS)			
<b>16.0</b>	<b>TELEPHONE</b>			
	<b>(Other items please itemize)</b>			
16.1	IP PBX			
16.2	Basic IP Phone			
16.3	JC9 Manhole			

16.4	JB30 Manhole			
16.5	2 Way 100mm Dia. Telephone Duct			
16.6	2 Way / 4 Way 150mm Dia. G.I Pipe (Class B)			
	<b>OTHER EQUIPMENTS PLEASE ITEMIZE</b>			

Note: **Tenderer is required to submit Manufacturer's catalogue, technical specifications and test data for all equipment offered shall be submitted together with the tender. Tender without complete catalogues and technical details will be rejected.**

Deklarasi Petender:

Saya sedar dan ambil maklum bahawa kegagalan saya untuk menyemak maklumat terkini *online* dalam EMAL serta Pekeliling Kontrak Perbendaharaan Bil 14/2012 yang mengakibatkan keperluan teknikal tidak ditepati dan kegagalan saya untuk mengisi maklumat yang diperlukan dalam ruang-ruang yang disediakan ataupun kegagalan saya mengembalikan maklumat katalog serta dokumen yang lengkap dalam dokumen tender ini boleh menyebabkan tender saya ditolak.

Tandatangan Petender:

Nama Petender:

Cop Rasmi Petender:

Tarikh :