



भारतीय विमानपत्तन प्राधिकरण

AIRPORTS AUTHORITY OF INDIA

No. AAI/Engg/AMED-VII/CISF/2024/A-11

Date: 04.07.2024.

M/s. VK Sam Engineering.,
No.5, Rajiv Gandhi Nagar,
Ekkaduthangal,
Chennai - 600 032.

Sub: Trans-Installation of DG Set and associated works at CISF Barrack of Chennai Airport.

Ref: Tender ID: 2024_AAI_193917_1

Dear Sir(s),

1. Your e-Tender for the above mentioned work has been accepted by the Competent Authority on behalf of The Chairman, Airports Authority of India, at the item rates quoted by you totaling to Rs. 42,25,128.00 (Rupees Forty Two Lakhs Twenty Five Thousand One Hundred and Twenty Eight Only) excluding GST which is 20.12% below the Estimated Cost of Rs.52,89,305.00 (Rupees Fifty Two Lakhs Eighty Nine Thousand Three Hundred and Five Only) excluding GST put to tender.
2. Joint General Manager (Engg. - Elect), Airports Authority of India, Chennai Airport, Chennai - 600 016 shall be the Engineer-In-Charge of the work. You are requested to attend to the Office of Joint General Manager (Engg -Elect), AAI, Chennai Airport by 13.07.2024 to sign and complete the contract agreement. The contract agreement shall be executed on a non-judicial stamp paper of value of Rs.100/- (Rupees One Hundred Only) and the cost of the stamp paper shall be borne by you.
3. Please deposit an Amount of Rs. 4,22,513.00/- (Rupees Four Lakhs Twenty Two Thousand Five Hundred and Thirteen only) towards Security Deposit within 10 days from the date of issue of this letter, failing which, the same will be deducted as per Clause 1A of Contract Document. Earnest Money Deposit amount will be returned back to your account after deducting equal amount of EMD against Security Deposit from your bill.
4. You are requested to comply with the provision of Contract Labour (Regulation and Abolition) Act 1970 and Contract Labour (Regulation and Abolition) Central Rules 1971 and Minimum Wages Act and Rules there of Central and State Governments.
5. Please note that the time allowed for carrying out the work shall be 4 (Four Months) and the same shall be reckoned from 13.07.2024.
6. You are also directed to contact the Sr. Manager (Engg-Elect), Airport Maintenance Electrical Division-VII, Airports Authority of India, Operational Offices, Chennai Airport immediately for the execution of the above mentioned work.

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फैक्स: 044 - 2256 0008 ईपीएबीएक्स: 2256 0551, चेन्नईहवाईअड्डे, चेन्नई - 600 016.

Fax: 044 - 2256 0008 EPABX: 2256 0551, Chennai Airport, Chennai - 600 016.



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7. Any further correspondence in connection with the contract should normally be addressed to the Engineer-In-Charge.
8. Please acknowledge the receipt and return the duplicate copy of this letter enclosed herewith after signing it to the undersigned as a token of acceptance.

Encl: Schedule of Work (Page No. 01 to 06)

Yours faithfully,

(A MARIAPPAN)

Jt. General Manager (Engg - Elect),
For and on behalf of the Chairman,
Airports Authority of India.



AIRPORTS AUTHORITY OF INDIA
CHENNAI INTERNATIONAL AIRPORT
CHENNAI - 600 016
SCHEDULE OF WORK

NAME OF WORK: Trans-Installation of DG Set and associated works at CISF Barrack of Chennai Airport.

Sl. No.	Description of Items	Qty	Unit	Basic Rate Excluding GST	Amount
	SH-I : Supply of Sub Station Equipments				
1.00	Fabrication and supply of cubical type LT Panel - type tested design as per IEC 61439-1 & 2 suitable for 415 V, 3 Phase, 4 wire 50 Hz AC supply, made out of 2 mm thick CRCA sheet steel, 3 mm thick for gland plates, dust tight, vermin proof, totally enclosed, the degree of protection of enclosures system of IP42 in accordance with IEC 60529, Form 4b compartmentalised design, floor mounting, free standing, extensible on both sides i/c cleaning & finishing complete with 7 tank process for powder coating in approved shade, having 800 Amps capacity FP Aluminium bus bars of high conductivity, DMC/SMC bus bar supports with short circuit withstand capacity of 50 KA for 1Sec., bottom base channel of MS section not less than 100 mm x 50 mm x 5 mm thick, fabrication done in transportable sections, entire panel having a common copper earth bar of size 50mm x 5 mm at the rear with 2 Nos. earth stud at rear side, solid connections from main bus bars to switch gears with required size of Aluminium bus bars and control wiring with 1.5 Sq.mm. FRLSH PVC insulated copper conductor cable for potential sensing, 2.5 Sq.mm. FRLSH PVC insulated copper conductor cable for current carrying, cable alleys, cable gland plates and suitable for indoor operation, complete with all accessories, interconnection, earthing etc., as required and comprising of following switch gears:				
	Incoming:				
	One No. 630A, 50 KA, Four Pole MCCB (Ics=Icu) as EB Supply Incomer with inbuilt O/L, S/C and earth fault Protection with microprocessor based release and provided with Three Nos. Cast resin of suitable rating CTs with digital Multifunction Meter having RS 485 port (EM6400NG of Schneider make or equivalent), ON/ OFF/ TRIP and Phase indication LED indication lamp along with control MCBs as per Standard practice etc., as required.				
	One No. 630A, 50 KA, Four Pole MCCB (Ics=Icu) as DG Supply Incomer with inbuilt O/L, S/C and earth fault Protection with microprocessor based release and provided with Three Nos. Cast resin of suitable rating CTs with digital Multifunction Meter having RS 485 port (EM6400NG of Schneider make or equivalent), ON/ OFF/ TRIP and Phase indication LED indication lamp along with control MCBs as per Standard practice etc., as required.				
	Two incomers shall be Electrically and Mechanically interlocked so that only One incomer can be switched on at a time. All accessories such as fuses, auxiliary contactors, auxiliary switches, etc., as required.				
	Battery charger and other controls:				
	(i) 24 V Battery Charger consisting of transformer, rectifier, AC/DC Ammeter, AC/DC Voltmeter and charge rate selector switch with position OFF/ Trickle/ OFF/ Boost for charging capacity of 24 Volts lead acid battery (2 Nos. each of 12 volts exide express batteries of 180 AH in two steps i.e. trickle/ boost charging (excluding Batteries)), Rheostat etc., (ii) One Set of Timer/ Relay/ Push Button/ Contactors for Start/ Stop/ Reset Operation of DG Set with LED indications and Selector Switches for Manual/ Test/ ON/ OFF Operation DG Set etc., (iii) One Six Channel Annunciation with Hooter Alarm for Performance/ Abnormality of DG Set.				
	Outgoing:-				
	Three Nos. 400 A, 36 KA, Four Pole MCCB (Ics=Icu) with inbuilt O/L, S/C and Earth fault Protection with microprocessor based release and each MCCB provided with one set of Cast resin of suitable rating CTs with digital Multifunction Meter having RS 485 port (EM6459 of Schneider make or equivalent), ON/OFF/TRIP LED indication lamp along with control MCBs as per Standard practice etc., as required.				

Sl. No.	Description of Items	Qty Unit		Basic Rate Excluding GST	Amount
	Two Nos. 250 A, 36 KA, Four Pole MCCB (Ics=Icu) with inbuilt O/L and S/C and Earth fault Protection with microprocessor based release and each MCCB provided with one set of Cast resin of suitable rating CTs with digital Multifunction Meter having RS 485 port (EM6459 of Schneider make or equivalent), ON/OFF/TRIP LED indication lamp along with control MCBs as per Standard practice etc., as required.				
	Two Nos. 125 A, 36 KA, Four Pole MCCB (Ics=Icu) with inbuilt O/L and S/C fault Protection with thermal magnetic release and each MCCB provided with one set of Cast resin of suitable rating CTs with digital Multifunction Meter having RS 485 port (EM6459 of Schneider make or equivalent), ON/OFF/TRIP LED indication lamp along with control MCBs as per Standard practice etc., as required.				
	Two Nos. 100 A, 36 KA, Four Pole MCCB (Ics=Icu) with inbuilt O/L and S/C fault Protection with thermal magnetic release and each MCCB provided with one set of Cast resin of suitable rating CTs with digital Multifunction Meter having RS 485 port (EM6459 of Schneider make or equivalent), ON/OFF/TRIP LED indication lamp along with control MCBs as per Standard practice etc., as required.				
	Busbar:				
	One Set of FP Aluminium Bus Bars of minimum of 800 A Capacity with heat shrinkable coloured sleeves and i/c DMC/SMC bus bar cross section supports & their spacing etc., for meeting fault level of 50 KA for 1 Sec with adequate size aluminium busbar for interconnection of incomer and outgoing switchgears etc., as required. All accessories such as fuses, auxiliary contactors, auxiliary switches, etc., as required.				
	All as above 1.00	1.00	Job	11,25,006.00	Rs. 11,25,006.00
2.00	Design, fabrication, assembly, wiring, supply, erection, testing and commissioning of Hybrid Solution to achieve >0.99 Lag and TDDI/ THDV values within IEEE recommended limits. The Solution should have an incomer of MCCB as specified below, 415V, +/- 5 % 50Hz, 3 phase, 36KA, System. It includes the minimum 3Nos. of suitable rating cast resin sensing CTs and the control cable from Incomer panel. The system shall be of design as per IS 16636. The degree of protection of enclosures system shall be IP42 in accordance with IEC 60529. DAPFC shall have Auto/Manual selection scheme with selector switch etc. The switching device of the active compensation system shall be IGBT based. The active compensation system should filter harmonics from 2nd to 51th individual harmonic order and shall be selectable for the entire range. The active compensation system should have feature to improve PF correction as well. The active compensation system should have a Multi master operation. Response time shall be 100 micro Sec or less. IGBT BASED HYBRID POWER FACTOR CONTROL PANEL (75KVAR+100AMP)				
	Incoming				
	400Amps 36 KA, 4P with inbuilt O/C, S/C and E/F Protection with Microprocessor Based Releases with Ics = Icu, RS485port - 1No. Each consisting of following 400/5A, CL-1, 15VA, Resin cast CTs - 3 Nos, 6A control MCB - 3 Nos. LED Type R-Y-B Phase Indication Lamps - (1 set) Digital Ammeter with inbuilt selector switch -1No. VAF Multifunction meter (MFM) - 1No. 7 Inch LCD Touch Screen for all Parameters Related to IGBT Based System -1No. a) The LCD should display all parameters like Currents, Fundamental Current, iTHD, iTDD, Aunb, Voltages, Vthd, kW, kVAR, kVA, PF, dPF, Filter Current, Filter Loading (%), Stack Temperature, Ambient Temperature, Filter Runtime, System Runtime etc., and also have the provision of a proper fault log which can be exported to an external storage device. Minimum of 8 stage APFC Relay. b) LCD interface should be able to log >2,00,000 time stamped events and faults in memory. c) LCD should be capable of displaying individual harmonics for currents and voltages upto 51st order. d) LCD should be capable of simultaneously displaying current and voltage waveforms. User should be able to select the phases to display.				

Sl. No.	Description of Items	Qty Unit		Basic Rate Excluding GST	Amount
	Outgoings:				
	i) Each Active Harmonic Filter Feeder Consists of: a) 160A, 3P, 36KA, MCCB with Thermal Magnetic release & Spreader links -1No. b) 100A AHF Module - 1No. c) HMI i.e. Hybrid PQ controller shall be used to integrate the active and passive sections seamlessly.				
	ii) 2 Nos. of Capacitor bank and each Feeders Consists of : a) 63A, 3P, 25KA, MCCB Thermal Magnetic with Spreader links -1Set. b) 25KVAR, TP Capacitor duty Contactor - 1No. c) 7% detuned reactor for feeder 25 KVAR - 1No. d) Capacitor shall be of heavy Duty Power Series MPP 25KVAR @ (525V) - 1No. iii) 1 No. Capacitor bank and each Feeders Consists of: a) 32A, 3P, 25KA, MCB Thermal Magnetic with Spreader links -1Set. b) 10KVAR, TP Capacitor duty Contactor - 1No. c) 7% detuned reactor for feeder 10 KVAR - 1No. d) Capacitor shall be of heavy Duty Power Series MPP 10KVAR @525V - 1No. iv) 3 Nos. of Capacitor bank and each Feeders Consists of : a) 16A, 3P, 25KA, MCB Thermal Magnetic with Spreader links -1Set. b) 5KVAR, TP Capacitor duty Contactor - 1No. c) 7% detuned reactor for feeder 5 KVAR - 1No. d) Capacitor shall be of heavy Duty Power Series MPP 5KVAR @525V - 1No. All outgoing having: a) On/OFF Indications and Push Buttons Switch - 1 Set Each vertical compartment having a) illumination Lamp, Door Limit switch, Space Heater, Exhaust Fan & Thermostat.				
	Busbar:				
	One Set of TPN Aluminium Bus Bars of minimum of 400 A Capacity with heat shrinkable coloured sleeves and i/c DMC/SMC bus bar cross section, size supports & their spacing etc. for meeting fault level of 36 KA for 1 Sec and 25x5mm Copper earth strip etc., as required.				
	All accessories such as auxiliary contactors, auxiliary switches, push buttons MCBs, rotary handles, phase separators etc., as required.				
	All as above 2.00	1	Job	7,80,000.00	7,80,000.00
3.00	Supply of nominal 2.0 mm thick (Width 1 Mtr) PVC synthetic, electric insulated mats conforming to IS 15652-2006 having Dielectric strength of 30 KV, no adverse effect of mineral oil, high insulation resistance (Minimum 1,00,000 M Ω on wet condition with 5 KV meggar) with yellow coloured bordered reflective Adhesive sticker of width 50mm at borders etc., as required.	100	Sq.Mtr.	575.00	57,500.00
4.00	Supply of XLPE insulated and PVC sheathed aluminium conductor armoured power cable of 1.1 KV grade conforming to IS 7098 (Part-I) 1988 as amended upto date and of following size as required:				
a	3.5 X 300 Sq.mm	500	Mtrs	1,450.00	7,25,000.00
SH-I: Supply of Sub Station Equipments Total					₹ 26,87,506.00
	SH-II: Installation, Testing, commissioning of Sub-Station Equipments.				
5.00	Installation, Testing and Commissioning of 415V, 800 Amps Bus bar rating MV LT Panel mentioned at SH-I /1 including dismantling of existing LT Panel in Pump room at CISF barrack, provision of supporting "C" channel size 100 x 50 x 6 mm thick including shifting of dismantled LT panel to AAI store etc., complete as required.	1.00	Job	15,000.00	15,000.00
6.00	Installation, Testing and Commissioning of 75 KVAR + 100Amp. IGBT based Hybrid APFC panel mentioned at SH-I /2 including provision of supporting "C" channel size 100 x 50 x 6 mm thick, laying of 2.5 sqmm multi strand copper conductor PVC insulated and PVC sheathed armoured control cable for sensing purpose between Current Transformers at LT panel and Hybrid APFC panel and all connections and interconnections & including shifting of dismantled APFC panel to AAI store etc., complete as required.	1.00	Job	15,000.00	15,000.00

Sl. No.	Description of Items	Qty Unit		Basic Rate Excluding GST	Amount
7.00	Dismantling & Shifting of LT DG change over Panel comprising of Two No. Incomer with 4 Nos. of MCCBs as Outgoing from outside pump room to inside pump room, mounting on 450 mm height MS pedestal, including disconnection of outgoing and incomer cables and installation, testing and commissioning etc., complete as required.	1.00	Job	10,000.00	10,000.00
8.00	Dismantling, Shifting and Transporting of 320 KVA LT DG set from Pump room to New LT panel/ DG room including disconnection of control cabling, Power cabling, earthing etc., and Installation, Testing, Commissioning and painting of same DG set in Proposed new location for DG including control cabling, DG functional checks as per OEM's standards or E-I-C direction and pre-commissioning testing including supply and laying of multi strand copper conductor of PVC insulated and PVC sheathed armored control cable for sensing purpose between LT panel and DG set etc., complete as required.	1.00	Job	75,000.00	75,000.00
9.00	Supply and Fixing of Exhaust gas piping of 150mm diameter for extending the existing smoke exhaust pipe upto the building height for 320 KVA LT DG set with welded black MS B class pipe conforming to IS:3589 cut to required lengths and installed with necessary bends and clamps, insulation of exhaust system with mineral wool/ Rockwool of not less than 50 mm thick, wire mesh & Aluminium cladding with Aluminium sheet thickness of not less than 24 SWG including the bends/ flanges therein, by fixing appropriate size steel screws and washers all over and provision of suitable MS supporting arrangement for exhaust pipe as per site requirement and as approved by EIC etc., complete as required as per specifications.	10	Mtrs.	5,200.00	52,000.00
10.00	Supply, Installation, Testing and Commissioning Galvanized Sheet Steel (GSS) square/ rectangular conforming to IS: 277 ducting for dissipation of hot air to outside for 320kVA DG made out of 22SWG (0.64 mm) thick, to be fabricated complete with gaskets, elbows, splitters, vanes including MS angle supporting arrangement as per site requirement and as approved by EIC etc., complete as required as per specifications.	40	Sq.mtr	1,800.00	72,000.00
11.00	Fixing of nominal 2.5 mm or 2.0 mm (Width 1 Mtr) thick PVC synthetic, Electric insulated mats conforming to IS 15652-2006 along with suitable adhesive/ chemibond on the Surface/ Chequered plates / Concrete Covers over Cable Trench, sealing of all joints and edges, providing reflective tape of 50mm all around the mat etc., complete as required.	100	Sq.mtr	100.00	10,000.00
SH-II: Installation, Testing, commissioning of Sub-Station Equipments Total					₹ 2,49,000.00
SH-III : Laying of Cables, Earthing and Associated Works					
12.00	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.				
a	Above 95 sq. mm and upto 185 sq. mm	20	Mtrs.	475.00	9,500.00
b	Above 185 sq. mm and upto 400 sq. mm	20	Mtrs.	500.00	10,000.00
13.00	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing masonry open duct as required.				
a	Above 95 sq. mm and upto 185 sq. mm	20	Mtrs.	60.00	1,200.00
b	Above 185 sq. mm and upto 400 sq. mm	60	Mtrs.	75.00	4,500.00
13.00	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.				
a	Above 95 sq. mm and upto 185 sq. mm	30	Mtrs.	60.00	1,800.00
b	Above 185 sq. mm and upto 400 sq. mm	300	Mtrs.	70.00	21,000.00
14.00	Laying and fixing of one number PVC insulated and PVC sheathed/ XLPE power cable of 1.1 KV grade of following size on wall surface as required.				
a	Above 95 Sq.mm upto 185 Sq.mm (clamped with 25x2mm MS flat clamp)	20	Mtrs.	75.00	1,500.00
b	Above 185sq.mm upto 400 sq.mm(clamped with 40x3mm MS flat clamp)	120	Mtrs.	110.00	13,200.00

Sl. No.	Description of Items	Qty Unit		Basic Rate Excluding GST	Amount
15.00	Supply and Laying of 110 mm dia OD HDPE Pipe of PN6 PE 80 grade ISI Marked conforming to IS:4984 along with all accessories like sockets, bends, coupler etc., complete with fitting, cutting, jointing etc. direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.	300	Mtrs.	675.00	2,02,500.00
16.00	Retrieval of one number PVC/XLPE insulated and PVC sheathed power cable of 1.1KV grade of size upto 400 Sqmm from ground including excavation and refilling the trench etc., as required.	50	Mtrs.	320.00	16,000.00
17.00	Retrieval of one number PVC/XLPE insulated and PVC sheathed power cable of 1.1KV grade of size upto 400 Sqmm from the existing RCC/ HUME/ STONEWARE/ METAL/ GI PIPES/ Duct/ TRAY/ TERRACE etc. by breaking the concrete and making it to the original condition by putting concrete, complete as required.	50	Mtrs.	250.00	12,500.00
18.00	Supplying and laying of "B" Class G.I pipe of 150 mm dia, i/c excavation of bituminous/ concrete road/ pavement, excavation of trench of required width for laying of G.I pipe, depth upto 800 mm, providing and laying cement concrete of 1:4:8 ratio at bottom (100 mm) of pipe, refilling the trench with soil, ramming, watering, consolidation and making the surface to original finish with PCC of 1:2:4 ratio on top (200 mm) and disposal of left out soil away from CISF barrack premises etc., complete as required.				
a	150 mm	18	Mtrs.	2,381.00	42,858.00
19.00	Supplying and laying of "B" Class G.I pipe of 150 mm dia including excavation of Soil depth upto 750 mm and refilling the trench with excavated Soil after laying Pipe, ramming, watering, consolidation and making good the surface to original finish and disposal of left out excavated soil away from CISF barrack premises etc., complete as required.				
a	150 mm	6	Mtrs.	1,883.00	11,298.00
20.00	Supplying and making straight through joint with heat shrinkable kit including ferrules and other jointing materials for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
a	3½ x 120 Sq.mm	1	No.	3,790.00	3,790.00
b	3½ x 185 Sq.mm	1	No.	4,382.00	4,382.00
c	3½ x 240 Sq.mm	1	No.	6,072.00	6,072.00
d	3½ x 300 Sq.mm	4	Nos.	6,250.00	25,000.00
21.00	Supplying and making indoor end termination with brass double compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.				
a	3½ x 120 Sq.mm	2	Nos.	1,750.00	3,500.00
b	3½ x 185 Sq.mm	2	Nos.	2,826.00	5,652.00
c	3½ x 240 Sq.mm	2	Nos.	3,230.00	6,460.00
d	3½ x 300 Sq.mm	8	Nos.	4,050.00	32,400.00
22.00	Supply and Fixing of 10 mm thick SMC chequered plates including provision of 50 x 50 x 5mm thick MS angle in all side and diagonal of SMC plate for strengthening by Aluminium revitting and MS lifting hook etc., complete as required.	20	Sq.Mtrs	11,500.00	2,30,000.00
23.00	Supply, fabrication, Transportation and installation of the MS channel/ angle/ flat for cable tray/ support including cutting, welding, drilling, fixing, grinding, applying red oxide primer of two coats and two coat of enamel paint of Black colour etc., complete as required. and as per the instructions of Engineer-In-Charge.	1,000.00	Kgs.	135.00	1,35,000.00
24.00	Earthing with Copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt along with required masonry chamber, CI Cover with outer size of 450mm X 450mm X 10mm including excavation & refilling etc., as required.	2	Nos.	27,000.00	54,000.00
25.00	Earthing with G.I. earth pipe 4.5 meter long, 40 mm dia including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt along with required masonry chamber, CI Cover outer size of 450mm X 450mm X 10mm including excavation & refilling etc., as required.	8	Nos.	7,000.00	56,000.00

Sl. No.	Description of Items	Qty	Unit	Basic Rate Excluding GST	Amount
26.00	Providing and fixing 50 mm X 5 mm copper strip in 80 mm dia 'B' Class G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer and brassing i/c excavation of bituminous/ concrete / pavement & excavation of Soil to the depth of 0.30 Mtrs from ground, refilling the Soil and with 1:2:4 concrete on top for 0.15 Mtrs after laying Pipe and making good the same to original surface etc., complete as required.	10	Mtrs.	3,715.00	37,150.00
27.00	Supplying and laying 50 mm X 5 mm copper strip at 0.50 meter below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc., as required. (Jointing shall be done by overlapping and with 2 Sets of brass nut bolt & spring washer spaced at 50mm)	10	Mtrs.	3,048.00	30,480.00
28.00	Providing and fixing earth bus of 50 mm X 5 mm copper strip on surface including connection with brass nut, bolt, spring, washer and brassing for connections etc., as required.	20	Mtrs.	3,025.00	60,500.00
29.00	Providing and fixing 50 mm X 5 mm G.I. strip in 80 mm dia 'B' Class G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer and brassing i/c excavation of bituminous/ concrete / pavement & excavation of Soil to the depth of 0.30 Mtrs from ground, refilling the Soil and with 1:2:4 concrete on top for 0.15 Mtrs after laying Pipe and making good the same to original surface etc., complete as required.	40	Mtrs.	1,307.00	52,280.00
30.00	Supplying and laying 50 mm X 5 mm G.I strip at 0.50 meter below ground as strip earth electrode, including connection/ terminating with nut,bolt, spring, washer etc., as required. (Jointing shall be done by overlapping and with 2sets of brass nut bolt & spring washer spaced at 50mm)	20	Mtrs.	620.00	12,400.00
31.00	Providing and fixing earth bus of 50 mm X 5 mm G.I strip on surface including connection with brass nut, bolt, spring, washer and brassing for connections etc., as required.	60	Mtrs.	425.00	25,500.00
	Providing Civil Works as required as detailed below:				
32.00	Providing and laying cement concrete in retaining walls, return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets, sunken floor, etc., up to floor five level, excluding the cost of cantering, shuttering and finishing.				
a	Cement concrete in 1:3:6 (1 cement: 3 coarse sand : 6 graded stone aggregate 20mm nominal size)	6	Cum	8,000.00	48,000.00
b	Cement mortar in 1:6 (1 cement: 6 coarse sand)	3	Cum	6,000.00	18,000.00
c	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in with Cement mortar 1:6 (1 cement : 6 coarse sand).	3	Cum	10,000.00	30,000.00
d	Cement plaster of 15 mm on the rough side of single or half brick wall of mix with 1:6 (1 cement: 6 coarse sand).	12	Sq Mtr	600.00	7,200.00
e	Steel rod for RCC Slabs.	200	Kgs	110.00	22,000.00
33.00	Demolishing of hard concrete floor manually/ by mechanical means using compressor drilling machine and making the surface to original finish with PCC of 1:2:4 mix to match with the adjacent hard concrete floor including disposal of concrete debris away from Airport premises etc., complete as required.	10	Cum	3,500.00	35,000.00
	SH-III: Laying of Cables, Earthing and Associated Works Total				Rs. 12,88,622.00
	Total amount (SH-I + SH-II+ SH-III)				Rs. 42,25,128.00
	Total				Rs. 42,25,128.00

(Rupees Forty Two Lakhs Twenty Five Thousand One Hundred and Twenty Eight Only)

Note: Applicable GST shall be paid on submission of taxable invoice as extra.


 (A MARIAPPAN)
 Jt. General Manager (Engg - Elect)