



भारतीय विमानपत्तन प्राधिकरण

AIRPORTS AUTHORITY OF INDIA

No. AAM/ENGG/ELEC/AMED-I/902/3/2023-24/A-33

Date: 11.01.2024

M/s. Balaji Engineering,
Flat No. 18, 3rd Floor, Queens Castle,
Lakshmi Nagar, 7th Street, Nanganallur,
Chennai - 600 061.

Name of Work : Provision of Interleaving Circuit for PAPIs at Chennai Airport.

Reference : Tender Id- 2023_AAI_176092_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 ₹ 1,46,33,550.00 (Rupees One Crore Forty-Six Lakh Thirty Three Thousand Five Hundred and Fifty Only) excluding GST which is 13.72% (Thirteen Decimal Seven Two Percent) below the Estimated cost of ₹ 1,69,60,667.00 excluding GST put to tender.
2. Joint General Manager (Engg-Elect.), AAI, 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 20.01.2024 to sign and complete the contract agreement. The contract agreement shall be executed on a non-judicial stamp paper of value ₹ 100.00 (Rupees One Hundred only) and the cost of the stamp paper shall be borne by you.
3. Please deposit an amount of ₹ 14,63,355.00 (Rupees Fourteen Lakh Sixty Three Thousand Three Hundred and Fifty Five 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 03 (Three Months) and the same shall be reckoned from 20.01.2024.
6. You are also directed to contact Asst. Gen. Manager Engg. (Elect.), Airport Maintenance Electrical Division-I, Airports Authority of India, Operational Offices, Chennai Airport immediately for the execution of the above mentioned work.

Contd...2/-

फैक्स: 044 - 2256 0008 ई पी ए बी एक्स: 2256 0551, चेन्नई हवाई अड्डे, 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.

Yours faithfully,

(A. Mariappan)

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

Encl: Schedule of Work

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

Name of Work: Provision of Interleaving Circuit for PAPIs at Chennai Airport

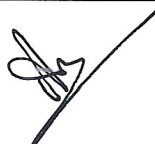
Sl.No.	Description of Item	Qty	Unit	Rate	Amount
1.00	SH:I Supply of Cables				
1.01	Supply of 2 x 25 mm ² 5KV grade XLPE insulated and PVC sheathed Armoured Aluminium conductor cable conforming to IS - 7098 (Part - II) 2011 as amended upto date and as per Techno Commercial Specifications (TCS) as required.	10900.00	Mtr	320.00	34,88,000.00
2.00	Supply of 1.1KV grade 3C 35 Sq.mm. armoured aluminium conductor XLPE insulated and PVC sheathed cable conforming to IS - 7098 (Part - I) 1988 as amended upto date as required.	300.00	Mtr	225.00	67,500.00
3.00	SH II: Supply of PAPI, CCRs etc.				
3.01	Supply of PAPI (Precision Approach Path Indicator) 4 light channelled (containing four identical units, 01 Set of 4 units) ready for installation, current powered system suitable for 6.6A series current system including as detailed below along with all accessories such as 6.6A bi-pin halogen lamp assembly, red filters, lenses, lamps, adjustable legs with breakable couplings, spreader assembly, reflectors and holders, two pin secondary lead plug assembly (5 Mtr long), dust proof housing with air filters, installation template frame, etc., confirming to the specifications of ICAO Annex-14 and Aerodrome design Manual Part-IV with up to date amendments complete as required.				
3.02	(a) Supply of 4 lamp PAPI units - (4 Nos - 1set) along with foundation frame, Checking stick and Check stick frame (4Nos - 1set)with all accessories etc., complete as required.	3	Set	500000.00	15,00,000.00
3.03	(b) Supply of Tool kit set for PAPI unit	2.00	Set	15000.00	30,000.00
3.04	(c) Supply of Clinometer for PAPI unit	2.00	Set	65000.00	1,30,000.00
4.00	Supply of FAA compliant, indoor type, natural air cooled microprocessor based Constant Current Regulator (CCR) of Thyristor control electronic type suitable for local and remote control with 24/48V DC control supply with 5 position brightness control and suitable for operation on input voltage of 230/415V, 50Hz. AC supply and output of 4 KW at 6.6A rating with all necessary accessories etc., complete as required.	6.00	Each	250000.00	15,00,000.00
5.00	Supply of 5000 volts grade, 50Hz individual lamps series type isolating transformer encapsulated in polyester resin finally moulded with neoprene rubber of following capacity and rating.				
5.01	a) 200 Watt, 6.6A/6.6A	69.00	Each	5000.00	3,45,000.00
6.00	Supply and making of ESNA connector kit of size 1 X 25 Sq.mm. of the 5KV grade AFL Al. conductor cable with proper crimping, joining of plug & receptacles etc., as required at site.	69.00	Each	550.00	37,950.00
7.00	Fabrication & Supply of MS Rectangular Transformer Housing Box of size 750x400x300 mm, made out of 8mm thick MS sheet on four sides and bottom, 10mm thick MS sheet for top cover with removable type with handles at both sides. Top cover shall be placed on 50x50x5mm angle supports with gaskets shall be provided inside box. MS box shall also have 1 No. 25mm dia drain hole at the bottom and suitable holes all four sides to enable entry of 50 mm Diameter 'B' Class GI pipe/63 or 90 mm dia OD HDPE Pipe OR as per Instructions of Engineer-In-Charge and one Vertical inner partition plate of 8 mm is also required as per TCS. Two Nos. cadmium plated earthing bolts with nuts, including painting with one coat of red oxide paint and two coats of black enamel paint finish for MS box etc., as required.	42.00	Each	12000.00	5,04,000.00



Sl.No.	Description of Item	Qty	Unit	Rate	Amount
8.00	SH III: Installation of PAPI units, CCRs and associated works.				
8.01	Installation, Testing & Commissioning of 01 set of 04 lamp PAPI unit (04 Nos.) including provision of concrete foundation of ratio 1:2:4 as per Design drawing of OEM, SS foundation bolts and nuts of grade SS 304, provision of checking stick base points with foundation etc. including levelling, secondary lead connection from isolating transformer etc., ground calibration and submission of test report involving the OEM authorised Engineer to complete the job as per specification, compliance with annexure 14 of ICAO and satisfaction of Engineer-In-charge etc. complete as required.	2.00	Each	75000.00	1,50,000.00
9.00	Installation, Testing & Commissioning of 01 set of 04 lamp PAPI unit (04 Nos.) including excavation of soil, provision of PCC bed, pre-cast RCC foundation as per Design drawing of OEM or TCS whichever is better with SS foundation bolts and nuts of grade SS 304, provision of checking stick base points with foundation etc. including levelling, secondary lead connection from isolating transformer etc., ground calibration and submission of test report involving the OEM authorised Engineer to complete the job as per specification, compliance with annexure 14 of ICAO and satisfaction of Engineer-In-charge etc. complete as required.	1.00	Each	75000.00	75,000.00
10.00	Installation, Testing & Commissioning of 01 set of 03 lamp PAPI unit (04 Nos.) including provision of concrete foundation of ratio 1:2:4 as per Design drawing of OEM, SS foundation bolts and nuts of grade SS 304, provision of checking stick base points with foundation etc. including levelling, secondary lead connection from isolating transformer etc., ground calibration and submission of test report involving the OEM authorised Engineer to complete the job as per specification, compliance with annexure 14 of ICAO and satisfaction of Engineer-In-charge etc. complete as required.	1.00	Each	75000.00	75,000.00
11.00	Dismantling of existing PAPI fittings (1 set of 4 units) from foundation, leveling of foundation with earth level and shifting of PAPI units with accessories to AAI store as directed by the Engineer-In-Charge.	4.00	Each	5000.00	20,000.00
12.00	Installation, Testing and Commissioning of 4KW CCR microprocessor based including all civil work etc. complete as required.	6.00	Job	8000.00	48,000.00
13.00	Installation of MS Rectangular Transformer housing box of size 750x400x300 mm in soft soil including excavation, providing 75mm thick cement concrete of ratio 1:2:4 on all around the transformer housing box with required slope on the top to match with the original surface etc., as required.	42.00	Job	3200.00	1,34,400.00
14.00	SITC of outdoor type sloped top feeder pillar box made out of MS sheet of size 18"x18"x9" of 3mm thick (painting the box with 2 coats of polyurethane paint of aviation yellow colour along with initial coat of zinc chromate primer etc.) suitable for 5KV grade AFL Cable End terminations, with hinged door, locking arrangement, cable entry holes, mounted on 1 No. 2" dia. GI pipe of 150 mm length with breakable coupling on 10mm thick MS base plate, fixing the feeder pillar box by providing 150mm PCC Cement Concrete (1:2:4) and Pre cast cement concrete cube of minimum size 450 x 450x 600 mm with foundation bolts of minimum length 300mm and 16mm dia & nuts with spring washer of SS 304 grade of suitable size i/c providing breakable couplings and providing cement concrete of ratio 1:2:4 all around the feeder pillar box board upto 0.5 mtr on the four sides of the feeder box for a depth of 150 mm etc. as approved by Engineer-In-Charge complete as required.	28.00	Job	15000.00	4,20,000.00



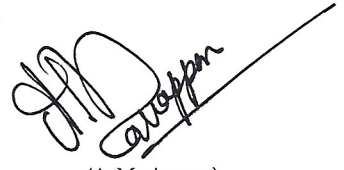
Sl.No.	Description of Item	Qty	Unit	Rate	Amount
15.00	Supply and Laying of 63 mm dia OD HDPE Pipe of PN6 PE 80 grade ISI Marked conforming to IS:4984 along with all accessories like sockets, bends, coupler etc, complete with fitting cutting, jointing etc. direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.	8500.00	Mtr.	325.00	27,62,500.00
16.00	Laying of one number PVC/XLPE insulated and PVC sheathed power cable of 5000 V grade upto 25 Sq.mm. AFL cable in the existing RCC/ HUME/ METAL/HDPE pipe as required.	10900.00	Mtr.	20.00	2,18,000.00
17.00	Laying of one number PVC/XLPE insulated and PVC sheathed power cable of 5000 V grade upto 25 Sq.mm. AFL cable in the existing masonry open duct as required.	2400.00	Mtr.	30.00	72,000.00
18.00	Supply & Laying of PVC insulated PVC sheathed annealed copper conductor, armoured control cable of 10 C X 2.5 Sq.mm. in the existing masonry open duct as required. (Cable conforming to IS 1554 - Part I -1988)	180.00	Mtr.	550.00	99,000.00
19.00	Laying of one number PVC/XLPE insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of power cable of size upto 35 sq.mm. in the existing masonry open duct as required.	240.00	Mtr.	30.00	7,200.00
20.00	Supplying and making end termination with brass compression gland and aluminium lugs for 3C 35 Sq.mm. size of PVC insulated and PVC sheathed / XLPE armoured aluminium conductor cable of 1.1 KV grade as required.	12	Each	500.00	6,000.00
21.00	Supplying and making end termination with brass compression gland and copper lugs for 10C 2.5 Sq. mm. size of PVC/XLPE insulated and PVC sheathed armoured Copper conductor control cable of 1.1KV grade as required.	12.00	Each	500.00	6,000.00
22.00	Earthing with G.I. earth pipe 4.5 metre long, 40 mm dia including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal/ coke and salt as required.	16.00	Each	8000.00	1,28,000.00
23.00	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	160.00	Mtr.	150.00	24,000.00
24.00	Supply and making straight through cable joint with 11KV grade heat shrinkable cable jointing kit including ferrules and other jointing materials for PVC / XLPE insulated PVC sheathed armoured Aluminium conductor AFL cable of 5 KV grade and of size 2Cx25 Sq.mm etc., as required.	16.00	Each	3500.00	56,000.00
25.00	Providing cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) to make platform including excavation to required depth and plastering around the installed transformer housing boxes/junction boxes etc. to required depth, as per the direction of Engineer-in-charge as required.	32.00	Cum	7500.00	2,40,000.00
26.00	Retrieval of 5 KV 6 Sq.mm/16 Sq.mm cable from existing 40/50 mm dia B class G.I. pipe, including transportation to AAI store, stacking etc., as per the direction of Engineer in Charge complete as required.	500.00	Mtrs	100.00	50,000.00
27.00	Retrieval of 5 KV 6 Sq.mm/16 Sq.mm cable from soft soil including excavation & back filling of the soil, transportation to AAI store, stacking etc., as per the direction of Engineer in Charge complete as required.	500.00	Mtrs	100.00	50,000.00
28.00	Supply and Laying of 90mm dia PE 100 PN 10 HDPE Pipes by single horizontal drilling of suitable dia in the operational area with depth range at 2.5 to 3 mtr including opening of manholes /pits on both sides, reaming, drilling, jointing of pipes, providing all required machines (HDD machine, mud mixer, earth mover etc.) and specialised manpower, closing of manholes / pits after laying the pipes etc as required.	600.00	Mtr	2750.00	16,50,000.00



Sl.No.	Description of Item	Qty	Unit	Rate	Amount
29.00	Supply of nominal 2.5 mm thick (Width 1 Mtr) PVC Synthetic, Electric Insulated Mat of conforming to IS:15652:2006 having dielectric system of 45KV and high insulation resistance (Minimum 1,00,000 Mega Ohm on wet condition with 5KV Meggar) as required.	20.00	Mtr	2000.00	40,000.00
30.00	SH:IV Modification of existing of ALCMS system				
30.01	Provision / Modification of existing ALCMS at ATC, CCR room and AOCC network stations of Chennai Airport by supply and installation of Input/ output modules, interfacing cards, in 2 Nos Vault Processors (One in Operation & One in Standby) at CCR room, development of software programme for the said 3 stations. Program will be installed in 2 Nos PLCs, 4 Nos PCs, suitable for control & monitoring of additional 6 Nos. CCR's (PAPI Interleaving circuits). Installation of program at site, rewiring, testing, commissioning, providing event & fault logging etc. for new CCR's for interleaving of PAPI units as required. The Upgraded system shall be suitable to control & monitor 6 Nos CCRs including cables. (Item has to be executed by M/s. NASU Systems being the OEM of existing main system)	1.00	Job	700000.00	7,00,000.00
Total SCH Items					₹ 1,46,33,550.00

Rupees One Crore Forty Six Lakh Thirty Three Thousand Five Hundred and Fifty Only

Note: GST Extra as applicable



(A. Mariappan)

Joint General Manager (Engg.-Elect.)

Signature Not Verified

Digitally signed by RAGHURAMA REDDY DODDA

Date: 2024.04.16 18:48:06 IST

Location: eProcurement System for Central PSUs