

## NOTICE INVITING BUDGETORY OFFERS

Name of Work	<b>NAME OF WORK :</b> “ Providing 4 Nos IP based outdoor CCTV Cameras, 5 Nos Telephone units, 3 Nos Air conditioning units , supply and laying of power cables, shifting of High mast and DG set at Toll Plaza and Administrative Block at new MPA Gate No. 9”.
Date of submission of budgetary quotation	On or Before <b>01.09.2023 at 11:00 Hrs.</b>
Address for communication:	Executive Engineer (E-HL), Mechanical Engineering Department, Mormugao Port Authority, Electrical Section, 1st Floor, Admin. Building, Headland sada Vasco-da-Gama Goa - 403804
Contact Details	Phone : (0832) 2594241, 2594244 Email : <a href="mailto:xene.mgpt@gmail.com">xene.mgpt@gmail.com</a>
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**EXECUTIVE ENGINEER (E-HL)  
MORMUGAO PORT AUTHORITY**

**MORMUGAO PORT AUTHORITY**  
**ENGINEERING MECHANICAL DEPARTMENT**

CME/XEN(EHL)/M-22/

.08.2023

**Sub:** “Providing 4 Nos IP based outdoor CCTV Cameras, 5 Nos Telephone units, 3 Nos Air conditioning units , supply and laying of power cables, shifting of High mast and DG set at Toll Plaza and Administrative Block at new MPA Gate No. 9”.

Ref:- Budgetary Quotation No. CME/XEN(E-HL)/BQ-5

Mormugao Port Authority intends to carry out the work of “Providing 4 Nos IP based outdoor CCTV Cameras, 5 Nos Telephone units, 3 Nos Air conditioning units, supply and laying of power cables, shifting of High mast and DG set at Toll Plaza and Administrative Block at new MPA Gate No. 9”.

As such, kindly furnish the budgetary quotation for the same (Scope of work enclosed as Schedule - 'A' and Price Schedule enclosed as Schedule - 'A1'.

Your budgetary quotation should reach to this office on or before 01.09.2023.

Thanking you,

Yours sincerely,

**EXECUTIVE ENGINEER (E-HL)**

**Technical specification**

**1.0. General :**

Mormugao Port Authority intends to take up the work of : “ Providing 4 Nos IP based outdoor CCTV Cameras, 5 Nos Telephone units, 3 Nos Air conditioning units , supply and laying of power cables, shifting of High mast and DG set at Toll Plaza and Administrative Block at new MPA Gate No. 9”.

**PART I (CCTV)**

**2.0 SCOPE OF WORK:**

Supply, Installation, testing & commissioning of outdoor IP cameras complete with housing and mounting kit and all other accessories Including NETWORK VIDEO RECORDER, POE switches, Junction Boxes, Supply and laying of CAT6 cable, PVC casing capping and providing live footage to desk top at CISF Control room.

- i) Supply, Installation testing, commissioning and handing over of 4 numbers of IP cameras (outdoor) 4MP complete with Camera housing and all other accessories including Camera Mounting structures if required
- ii) Supply, Installation, testing, commissioning and handing over 1 number of Network Video Recorder of 8 Channel complete with all accessories including necessary software for sharing the feed to desktop/screen at remote locations.
- iii) Supply, Installation, testing, commissioning and handing over of 2 no. of 8 port 100 mbps POE network switch.
- iv) Supply, Installation, testing, commissioning and handing over of 1 No. of 1KVA ONLINE UPS.
- v) Supply, Installation, testing, commissioning and handing over of 1 no. of 3meter Lattice Tower
- vi) Supply, Installation, testing, commissioning and handing over of 2 Set of Wireless Transmitters & Receivers
- vii) Supply, Installation, testing, commissioning and handing over of 2 no. of 32 inched LED monitoring screens.

- viii) Supply and laying CAT 6 indoor/outdoor Network Cable through PVC casing capping.
- ix) Configuration of all equipment as necessary including transmission/loading of designated Apps etc. to carry live feed to remote desktop/screen and providing 1 year on site support after completion of work.

### **3.0 STANDARDS and CODES**

The Fixed Cameras and Network Video Recorders shall comply with ONVIF standards and shall be UL/CE and FCC Certified. Each Camera shall be supplied along with accessories like Camera mounting GI Fixture with suitable base for Grouting.

### **4.0 Detailed Technical Specification**

#### **4.1 Supply, installation, testing and commissioning of IP fixed Bullet Cameras for Outdoor Duty**

The Camera shall be Outdoor duty, 2MP, IP fixed bullet, complete with all accessories as per the technical specification given below.

Total sensor pixels	2 Megapixel
Sensor Type	1/2.7" (+/- 10%), Progressive Scan CMOS,
Lens	Fixed
Frame Rate	25/30fps (1920x1080)
Minimum Illumination(Color/Monochrome)	0.08Lux@F2.0@1/25s
Video functions	Digital zoom
	3DNR(Dynamic Noise Reduction)
	HLC and Backlight Compensation
	ICR (Auto Day night)
IR distance	20 meter
Input Voltage	Dc 12V and PoE with IEEE standard
Ingress Protection	IP66 by default without any adaptation
Video compression	H.264/MJPEG
Streaming Capacity	Two-Stream
Memory	Card of 64GB
ONVIF	ONVIF compliant
Certifications	UL/CE and FCC

Note: Cameras shall be supplied with suitable Power supply and its mounting arrangements as per site conditions i.e. wall / pole mount, with all required accessories & fitments. Each Cameras shall be provided with necessary additional circuits with Ethernet Surge Protectors

to protect the units from High Voltages.

#### **4.2 Supply, installation, testing and commissioning of Network Video Recorder 8**

##### **Channel**

The proposed system shall be supplied with 8 channel NVR with necessary software to transmit live feed and shall be ONVIF compliant with following specifications.

No of Channels supported	8 channels
Power Input	12DC, 5A
Support Image Format	H.264/MJPEG
Max number of cameras	8
Supported browser	OS windows 7/8/10
ALARM	Input- 8, Output - 4
External storage	USB port
Output	2 HDMI port
Network Interface	1 number of 10M/100M/1000M
ONVIF	ONVIF compliant
Certifications	UL/CE and FCC

NVR Shall be supplied with suitable video management software for parallel monitoring on PC, recorded images if required shall be downloaded in PC also. NVR shall support external storage device also for future expansion of storage systems. The system shall be supplied with power cord, Audio/Video cables, necessary software etc.

#### **4.3 Supply and installation of 8 Port POE network switch**

Supply and Installation of 8- port GbE Fast and Smart Managed PoE Switch with 100 Mbps Ethernet PoE Ports, 2 combo (RJ-45/SFP), PoE ports 130 watt or better, Switching 20 Gbs or better, Operating Temperature- 0 degree centigrade to 50 degree centigrade or better.

#### **4.4 Supply and laying of CAT-6 cable**

Supply and Laying of CAT-6 outdoor type UTP weather proof cable suitable for indoor/outdoor cameras (CCTVs), CAT 6 UTP Cable Transmission frequency of 250 MHz (Minimum).

- I. Conductor Diameter: 0.520mm Nominal
- II. Insulation Diameter: 0.940 mm Nominal
- III. Armoured with Insulation: HD-PE
- IV. Should be ISI Certified.

#### 4.5 Supply and laying of Casing capping

Supply and Laying of PVC casing capping of suitable size to be fixed on wall (including with saddle, Gitti at sufficient distance with junction box, bend etc.). Cost is inclusive of the laying cost of CAT-6.

#### 4.6 Supply and installation of 40 inches LED display

The contractor shall supply and install (wall mounted and or desk mounted) 32 inched LED display and configure the same for viewing the live feeds of the cameras. Also the feed of the existing cameras will be provided on the same display by the contractor. The Display Monitor 40" LED shall have following specifications.

Resolution	1,920 x 1,080 (16:9)
Type	60 Hz LED BLU :1920x1080(16:9)
Pixel Pitch(mm/in)	0.15x0.46
Active display(mm/in)	885.6x498.1
RGB	FHD, DVI-D
Video	CVBS, Component, HDMI*2
Audio	Stereo mini jack
Input supply	110V – 270 V, AC

#### 4.7 Supply and installation of 1 KVA Online UPS

The supply of 1KVA online UPS includes all materials required for the installation and commissioning at site to provide stable power supply. The UPS shall comply with following specifications.

<b>Capacity</b>	<b>1KVA/900W</b>
<b>Input</b>	
Phase	Single Phase with Ground
Voltage Range	110 - 300V AC $\pm$ 5%
Frequency	50 Hz. $\pm$ 5%
<b>Output</b>	
Voltage	230V $\pm$ 5% single phase
Inverter Efficiency	> 85%
Current THD	Less than 5%
Overload Capability	105%-110%: UPS shuts down after 10 minutes at battery mode or transfer to bypass when the utility is normal.

	110%-130%:UPS shuts down after 1 minute at battery mode or transfer to bypass when the utility is normal.  >130%: UPS shuts down after 3 seconds at battery mode or transfer to bypass when the utility is normal
Current crest Ratio	3:1
<b>Transfer Time</b>	
AC Mode to Battery	Zero
Inverter to Bypass	<4ms(typical 2.5ms)
Wave Form	Pure sine wave
<b>Battery</b>	
DC Voltage	36V DC/IB(3x7AH inside)
Type	SMF
Charge Current	1.5A - 9.5 A
Charging Current	2.0A/4.0A/6.0A/8.0A (Maximum ) selectable via LCD setting
Environment	0-55 degree Celsius & 95% RH
Protection	i) Input AC Under / Over voltage ii) Out overload/short circuit iii) DC under/over voltage iv) Over temperature
Indication	LED /LCD
<b>Management</b>	
SMART RS-232 OR USB	Supports Windows 2000/2003/XP/Vista/2008/7/8, Linux, Unix, MAC
SNMP	Power Management from SNMP Manager and web Browser

#### 4.8 **Supply and installation of 6 Meter LATTICE TOWER:**

The tower shall be 3 legged lattice self-supported safety tower. It shall be fabricated with hot dip galvanized with painting to withstand the saline and very high humid atmosphere and the civil foundation shall be as per IS standard according to the tower size. The tower shall have Lightning arrestor and earthpit.

- a) Height : 6000 mm
- b) Bottom : 600 mm x 600 mm x 600 mm
- c) Pipe size : GI 48.0 x 3.25 mm THK

#### **Roof Top Details:**

- a) Roof level in weathering coats.
- d) Anchor fastener fixing drilling holes – 6 Nos.
- e) Anchor fastener dia 12 mm fixing for concrete depth 3 inch.

- f) Base bottom flat size 40 x 6 = 180 mm
- g) Shuttering four side
- h) Concrete mixing 1:2:4

**4.9 Supply, installation, testing and commissioning of Wireless Transmitters & Receivers**

- a) The wireless Transmitters & Receivers should fully support the Cameras installed in Toll plaza as a pair of the Centralized Video Surveillance System (CVSS), manned by personnel deployed by the Commandant / CISF. The technical specifications of the wireless Transmitters and Receivers are detailed below.

Data rate	512 Mbps
Type	Capable of Point to point
Frequency Range	5 Ghz and above (free operating frequency range)
Range	15Km. (expandable upto 25kms)
Channel width	5MHz / 10 MHz / 20MHz / 40 MHz
Modulation	MIMO-OFDM (64-QAM or higher) with Forward Error Correction (FEC)
Transmit power range	20 dBm and above
Powering Method	POE
Ingress Protection	IP 66
Operating Temperature	10 deg to 55 deg for outdoor use
Wind survival	150 km/hr
Encryption	128 bit AES
Firmware/Software Upgrades and Patches	The Bidder is required to install the Wireless Equipment with the latest firmware/software upgrades and latest security patches meant for fixing software glitches, vulnerabilities, functional enhancements etc. <b><u>Further, the Bidder is required to install firmware/software upgrades as well as apply latest patches as and when released by the OEM</u></b> for fixing software glitches, vulnerabilities or functional enhancements during the warranty



	period of two years and further three years CMC Period.
Product/Equipment Life	The Bidder should ensure that the Equipment to be supplied should be latest product release and not be declared as “End of Life” Product by the respective OEM as on the date of submission of the Tender.
Certifications	UL/CE and FCC Certified ETA Approval (EQUIPMENT TYPE APPROVAL) issued by the Wireless Planning & Coordination Wing (WPC Wing).

- b) All the RF Equipment’s supplied shall have ETA Approval issued by the WPC and a copy of the ETA (EQUIPMENT TYPE APPROVAL) indicating the make, model and release date of the proposed TRANSCEIVER shall be furnished.

Note: 1) The wireless system supplied with point to point radio systems. All the necessary Hardware /Software shall be supplied. The Contractor should enclose MAF certification for the make offered. Bids without the MAF certificate will be considered as invalid.

2) All the video feeds of the CCTV cameras to be connected at CCTV Control Room and Toll Plaza Building.

3) The Bidders shall enclose ETA approval from WPC indicating the make & model of the RF equipment offered for Point to Multi Point system (Both Base & Subscriber units). The Equipment without the approval of ETA from WPC will NOT be accepted.

- c. In case Direct Line of Sight is NOT there or lost during the currency of the contract the Contractor shall make necessary changes/arrangements in the Structural height / supports or elsewhere along the zone of transmission at their own cost. No extra costs shall be borne by the Port.

**4.10 Miscellaneous Items**

Misc items, like saddles, fitting materials, screws, nuts, fasteners, jointers, sealants, RJ45, accessories, 3 core 1.5 sq.mm PVC flexible wire, 2 nos. 5A switch socket combined etc as required for the total commissioning, to be provided by the Contractor to commission the system successfully.

#### **4.11 Remote Viewing facility**

The Contractor shall make arrangement so that live streaming of 4 nos. cameras shall be made available on desktop / LED Monitor

The Contractor shall suitably train the Port's officials as mentioned above, to view the live streaming of cameras.

#### **4.12 System Overview/ General Features:**

- System capable to work for Day & Night operations (Automatic)
- All such locations where mounting structures and related accessories are required should be provided by the contractor within the cost quoted. Site survey should be undertaken.
- All equipment's should be suitable for 24 Hours duty cycle.
- All required equipment's mentioned/not-mentioned but required for smooth running of system is to be in outdoor weatherproof enclosure.
- **Viewing features:**
  - Adjust brightness, Contrast, Saturation & hue for a clearer view
  - Support digital zoom in to view specific areas

#### **5. INSTALLATION & COMMISSIONING**

1. The Contractor shall carry the work as per the BOQ.
2. The Contractor shall commence and complete the work within 60 days from date of issue of LOA to the satisfaction of the Chief Mechanical Engineer or his representative. Necessary scaffolding and safety measures for entire erection shall be done by the contractor.
3. The Cameras, NVR and all the other equipment's supplied shall be installed, tested, commissioned and handed over. The special tools instruments needed for regular servicing / maintenance working shall be supplied free of cost by the Contractor. All the materials required for the installation and commissioning at site including the materials for civil works required for Installation and commissioning of camera mounting structures shall be supplied by the Contractor. Misc items, like saddles, fitting materials, switch, sockets, screws, nuts, fasteners, jointers, sealants, accessories, etc as required to run the system included in quote.
4. The work should be carried out with utmost precaution not to disrupt existing CCTV system in any way.

5. The installation of the various equipment's shall be carried as per the site conditions and as directed by the EIC. The Contractor shall carry out the works in co-ordination with the on-going AMC Contractor.
6. Special care may be taken to prevent any damage to the Port's property during installation and commissioning. The workmanship shall be neat, clean and elegant/ aesthetic in appearance and painting of brackets etc. to be done with Marine paint to withstand saline atmosphere prevailing in the area.
7. All the quantities indicated in the price schedule/BoQ are indicative. However, the work shall be carried out as per site conditions. Payment will be released as per actual executed quantities after completion of work.
8. **Technical brochures/ data sheets of Cameras, and NVR should be submitted with the tender specifically for models the tenderer intends to supply. Note:** Change in the location of cameras will be at the discretion of the Engineer.
9. Power and water will be provided by the Port on free of cost.

**6. Manuals, Drawings**

On completion of the work the Contractor shall supply 3 sets of operation and maintenance manuals after commissioning. The soft copy of all the As built drawings and manuals should also be provided which shall include General arrangement with principal details, Schematic line diagrams (SLD), and any other special features implemented in the system.

**7. TESTS**

Relevant CE or UL certificate and ONVIF standards for Cameras and NVR etc shall be submitted along with materials to the satisfaction of the Chief Mechanical Engineer or his representative, failing which the materials will be rejected by Port.

**8. GUARANTEE**

The installation shall be guaranteed for 12 months from the date of acceptance and free maintenance shall be done during the guarantee period.

**9. MAINTENANCE DURING GUARANTEE PERIOD.**

1. The contractor shall provide one-year guarantee for the equipment's installed. The maintenance during guarantee period shall include replacement of all defective components of the system including the cameras.
2. During the one year guarantee period, the Port shall not bear any charges incurred by the contractor for deputing the skilled manpower or materials to carry out any form of

repairs.

3. The Contractor shall arrange his own tools and tackles including ladder for carrying out the works during the installation and guarantee period.
4. During warranty period if any of the equipment supplied by the Contractor i.e camera, NVR etc. are found defective /Damaged, same has to be replaced by the Contractor at their cost. Therefore Bidders shall assess the environmental conditions, wind speed etc in respect to the supply of quality of equipment's and workman ship so as to ensure continual stability in running of system successfully. The bidder shall maintain basic inventory of required spares for upkeep of the CCTV Camera Surveillance systems during the warranty period.
5. In case need arises, the technicians should be present after office hours and during holidays without any cost and liability to the Port. The tenderer shall provide contact telephone number/ mobile and E-mail address to also register complaints at his office.

## **PART II (Telephones)**

### **2.0 SCOPE OF WORK:**

Supply, Installation, testing & commissioning of telephone units, complete with laying of telephone cables, cable jointing, erection of Junction boxes, Cones, PVC casing capping, mounting kit and all other accessories.

- i) Supply, Installation Testing and Commissioning (SITC) of 2 nos. Outdoor FRP Telephone PVC Junction Boxes with suitable krone terminals and connecting the new/old cables/wires etc. and maintaining proper connectivity.
- ii) Supply, Installation testing, commissioning and handing over of 5 nos. Telephone phone units (Corded).
- iii) Supply and laying of 100 pair telephone cable through existing trench / in Road/Ramp crossing / along existing road trench / clamping along the existing wall, etc.
- iv) Supply and laying of 50 pair telephone cable through existing trench
- v) Supply, Installation, testing, commissioning and handing over of 1 No. of 24 Port extension card for remote shelf.
- vi) Supply and laying of 5 pair telephone cable through casing capping.
- vii) Supply of Rosette Boxes.

viii) Supply and Installation of suitable size casing capping.

ix) Supply and installation of 100 pair and 50 pair crones.

### **3.0 Supply and laying of telephone cable**

#### **3.1 Supply and Laying of 100 pair and 50 pair outdoor weather proof cable**

- In accordance with CW1128D/1198D
- Solid bare copper conductors
- Cellular polyethylene insulation
- Petroleum jelly water blocking compound
- Galvanised steel wire armour
- Black polyethylene jacket
- Conductor resistance (Max Average @200 C) 91ohms/km
- Mutual Capacitance (Max Average) 56 pF/m
- Insulation resistance (Min) 1500M ohms/km
- Capacitance unbalanced (Max) <275PF/500m

#### **3.2 Supply, laying, testing, commissioning and handing over of 5 pair telephone indoor cable**

- In accordance with CW1308
- Solid plain copper conductors
- Solid PVC insulation
- Conductors twisted together in pairs
- Overall PVC sheath
- Conductor resistance (Max @ 200 C) 97.8ohms/km
- Capacitance Unbalanced (Max) 500pF/500m
- Insulation resistance (Min @ 200 C): 50Mohms/km

### **4.0 Supply Installation, testing, commissioning of 2 Nos. of outdoor PVC Junction Boxes**

Specifications.

Construction : PVC housing with stainless steel mounting plate for LSA+ terminals.

Mounting: Four (4) screws wall mounting and / or Floor mounted with suitable clamps grouted with pcc.

Cable entry : by means of rubbers to be cut on correct size.

Capacity : 100 telephone pairs 0,4 up to 0,8mm upon model number.

Contact blocks: type "Knife LSA PLUS". Wire connections done by using special LSA + tool. Test tension 2KV and 10kA (20msec) Resistance :  $\geq 50 \text{ G}\Omega$  Capacity :  $\leq 1\text{pF}$   
Attenuation : at 3400Hz 110 dB at 20Mhz 30,5 dB  
Temperature range : Minus 20C<sup>o</sup> to +80C<sup>o</sup> at 95% humidity  
Protection : IP 66  
Dimensions (LxWxD): Kronnection I : 170x140x75mm Kronnection II 215x215x75mm  
Kronnection III 320x215x75mm  
Shipping weight : 1,5Kg up to 3 Kg depending on model.

### **5.0 Supply and laying of 5 pair telephone cable**

Supply and laying of 5 Pair 0.4 mm Copper Conductor, HDPE Insulation Telephone Cable suitable for indoor applications.

### **6.0 24 Port extension card for remote shelf.**

SITC of 24 Port extension card for remote shelf suitable for existing EPABX system.

### **7.0 Supply and laying of Casing capping**

Supply and Laying of PVC casing capping of suitable size to be fixed on wall (including with saddle, Gitti at sufficient distance with junction box, bend etc.).

### **8.0 Supply of Rosette Boxes**

Material ABS, No Of Way – Single, Shape – Rectangular, IP Rating IP44, Color –Off White, Temperature Range -25 to +85 Degree Celsius

### **9.0 Miscellaneous Items**

Misc. items, like saddles, fitting materials, screws, nuts, fasteners, jointers, sealants, RJ45, accessories, etc. as required for the total commissioning, to be provided by the Contractor to commission the system successfully.

### **10.0 System Overview/ General Features:**

- All such locations where mounting structures and related accessories are required should be provided by the contractor within the cost quoted. Site survey should be undertaken.
- All equipment's should be suitable for 24 Hours duty cycle.

- All required equipment's mentioned/not-mentioned but required for smooth running of system is to be in outdoor weatherproof enclosure.

#### **11.0 INSTALLATION & COMMISSIONING**

10. The Contractor shall carry the work as per the BOQ.
11. The Contractor shall commence and complete the work within 30 days from date of issue of LOA to the satisfaction of the Chief Mechanical Engineer or his representative. Necessary scaffolding and safety measures for entire erection shall be done by the contractor.
12. The telephones, cables, junction boxes and all the other equipments supplied shall be installed, tested, commissioned and handed over. The special tools instruments needed for regular servicing / maintenance working shall be supplied free of cost by the Contractor. All the materials required for the installation and commissioning at site including the materials for civil works required for Installation and commissioning of telephones shall be supplied by the Contractor. Misc items, like saddles, fitting materials, switch, sockets, screws, nuts, fasteners, jointers, sealants, accessories, etc as required to run the system included in quote.
13. The work should be carried out with utmost precaution not to disrupt existing telephone system in any way.
14. The installation of the various equipment's shall be carried as per the site conditions and as directed by the EIC. The Contractor shall carry out the works in co-ordination with the on-going AMC Contractor.
15. Special care may be taken to prevent any damage to the Port's property during installation and commissioning. The workmanship shall be neat, clean and elegant/ aesthetic in appearance and painting of brackets etc. to be done with Marine paint to withstand saline atmosphere prevailing in the area.
16. All the quantities indicated in the price schedule/BoQ are indicative. However, the work shall be carried out as per site conditions. Payment will be released as per actual executed quantities after completion of work.
17. Power and water will be provided by the Port on free of cost.

#### **12.0 GUARANTEE**

The installation shall be guaranteed for 12 months from the date of acceptance and free maintenance shall be done during the guarantee period.

#### **13.0 MAINTENANCE DURING GUARANTEE PERIOD.**

1. The contractor shall provide one-year guarantee for the equipment's installed. The maintenance during guarantee period shall include replacement of all defective components of the system.
2. During the one year guarantee period, the Port shall not bear any charges incurred by the contractor for deputing the skilled manpower or materials to carry out any form of repairs.
3. The Contractor shall arrange his own tools and tackles including ladder for carrying out the works during the installation and guarantee period.
4. During warranty period if any of the equipment supplied by the Contractor i.e telephones crones, etc. are found defective /Damaged, same has to be replaced by the Contractor at their cost. Therefore Bidders shall access the environmental conditions in respect to the supply of quality of equipment's and workman ship so as to ensure continual stability in running of system successfully. The bidder shall maintain basic inventory of required spares for upkeep of the telephone systems during the warranty period.
5. In case need arises, the technicians should be present after office hours and during holidays without any cost and liability to the Port. The tenderer shall provide contact telephone number/ mobile and E-mail address to also register complaints at his office.

### **PART III (Air Conditioners)**

#### **Scope of Work**

The Contractor shall carry out supply, installation, testing and commissioning of Inverter split type AC's complete with all accessories at MPA as per the technical specification given below.

a) **Inverter Split type Air conditioner 1.5TR**

<b>Sr. No.</b>	<b>Parameter</b>	<b>Specifications for 1.5TR inverter split AC's</b>
<b>1.</b>	Cooling Capacity	1.5 TR
<b>2.</b>	Star rating/ Energy Efficient ratio	5/ 4.60 or higher
<b>3.</b>	Electrical input	230V/50Hz/Single Phase



4.	Air flow rate	600 CFM or more
5.	Fan speed	3 Steps
6.	Function modes	Auto/Cool/Fan/Dry – shall have power saving mode, temperature setting option should be available, ECO mode
7.	Outdoor unit	Anti-corrosive Blue fins, Highly rust resistant casing for all weather conditions
8.	Air filtering unit	Dust proof and anti-bacteria filter
9.	Tubing	100% Copper, Min. Length 3 Mtr.
10.	Remote control	Wireless with Backlight display
11.	Refrigerant type	R-32
12.	Warranty	OEM standard warranty from the date of supply.
13.	Evaporator fins (Indoor unit)	Anti-corrosive Blue fins
14.	Acceptance Criteria	Split AC should conform to IS 1391(part 2)-1992, room AC specification.
15.	OEM ISO certification	ISO-9001 & ISO 14001
16.	Drain pipe	5/8" PVC rigid pipe of length 5 mtrs

b) Voltage Stabilizer for single phase split Air conditioners

<u>Sr. No.</u>	<u>Stabilizer Specification</u>	
1.	<u>Rating in KVA:</u>	<u>3.0 KVA and above</u>
2.	<u>Type of winding:</u>	<u>Copper</u>
3.	<u>Input Single Phase sine wave:</u>	<u>160V-260V</u>
4.	<u>Mounting Type:</u>	<u>Wall mounting</u>
5.	<u>Warranty</u>	<u>5 Years</u>

**Note: Item shall be procured from original manufacturer or from their authorized representative i.e. dealer/distributor/stockiest etc.**

Installation, testing and commissioning of Air conditioners

- Installation of split Air Conditioners as per OEM standards at the designated locations at MPA.
- Spares such as outdoor unit mounting bracket is under contractor's scope.
- The Cu pipes, drain pipes, power supply cables, insulating foam, wrapping tape required for interconnection of outdoor unit with indoor unit upto a length of 3 metres is under contractor's scope. Any additional length more than 3 meters of

the above materials which are required for completion of work will be paid at actuals.

- For drain pipe 5/8" PVC rigid pipe to be used for the entire length and 5/8" braided hose pipes shall be used to connect the PVC rigid pipe to indoor unit. The pipes shall be fixed using GI clamps, elbows, connectors & bends of suitable size as necessary. Cu pipes, power supply cables, foams have to be used as per OEM standards. **Power supply cables shall be used of single length without any joints.**
- Civil works such as drilling of holes in the wall for passing AC pipes, cables etc. and re-plastering with white cement to the satisfaction of Engineer-In-Charge is under contractor's scope. Drilling of holes should be done neatly by using suitable machines and accessories and should avoid extra chipping/damaging the walls and ceilings.
- Miscellaneous items for laying Cu tubing, drain pipe & power cables like saddles, fitting materials, screws, nuts, fasteners, jointers, sealants, etc. as required to be provided by the Contractor to commission the system successfully.

#### **Special Conditions of Contract**

- a) The Bidder shall be either an Original Equipment Manufacturer (OEM) or an authorized certified partner/authorized dealer of an OEM.
- b) The Bidder shall inspect the site if required, though not compulsory for installation at MPA, to ascertain the quantum of work before submitting their bid.
- c) PRICES: Prices quoted should be on F.O.R. destination basis inclusive of transit insurance indicating clearly the quantum of taxes and other charges whatsoever applicable. The prices should be firm. However, in case of any statutory revision in taxes within the delivery period of supply order, the same will be considered provided you furnish documentary evidence such as copy of Govt. notification.  
TAXES: Applicable GST at the time of delivery during the contractual period shall be included in the invoice.
- d) COMPLETION PERIOD: The A.C's are to be supplied & installed within 4 weeks of receipt of the purchase order/LOA, at Port, Vasco-da-Gama, Goa, duly insured at your cost.
- e) PACKING: The materials shall be duly packed to withstand the hazards of transportation.
- f) INSPECTION: The material will be inspected by our Quality Control Officer on receipt at our Stores. Any damage to the items during transportation shall be to Supplier's account. If the supplied items are rejected due to any defects/quality,

the supplier has to make his own arrangements at his cost to lift the rejected materials and to replace the same immediately.

- g) All the quantities indicated in the price schedule/BoQ are indicative. However, the work shall be carried out as per site conditions. Payment will be released as per actual executed quantities after completion of work. Payment shall be released by ECS/EFT/RTGS within 30 days of successful completion & commissioning of work and receipt of bills, whichever is later.
- h) Offers should not contain any sort of conditional discounts based on quantity or value of order.

#### **Part –IV (Power Cables)**

### **1. SCOPE OF WORK :**

2.1 The brief scope of work is listed below:

- a. The contractor shall supply cable of 4 core x 120 sq.mm aluminium armoured cable.
- b. The contractor shall supply cable of 4 core x 35 sq.mm aluminium armoured cable.
- c. Contractor shall excavate cable trench of size 1m deep x 0.6m width in hard soil.
- d. The Contractor shall then lay
  - (i) 2 runs of 4 core x 120 sq.mm aluminium armoured cable from Gate no.9 to T-3 shed panel at berth no.11 in RCC trench and through GI /Hume Pipes (Trench will be constructed by Port).
  - (ii) 1 runs of 4 core x 120 sq.mm aluminium armoured cable from Gate no.9 to High Mast no.2 feeder pillar behind GCB building through excavated trench.
  - (iii) 2 runs of 4 core x 35 sq.mm aluminium armoured cable from admin building to toll plaza through trench constructed by Port.
  - (iv) 1 run of 4 core x 35 sq.mm aluminium armoured cable from junction box to feeder pillar of High mast..
- e. The contractor shall provide GI pipe earthing using 40 mm dia., 2.9 mm thick, 2.5 meter long GI pipe with GI funnel with mesh and suitable size reducer fixed on the top of the earth electrode. The funnel should be enclosed in a CC chamber of 400 x 400 x 400 mm with a cast iron cover. The electrode shall have staggered holes of 12-mm dia and the electrode should be covered 150 mm around with alternate layers of salt and charcoal from the bottom of the pipe to the bottom of the CC chamber the connection from the electrode is to be established through GI Flats. (25x3mm) using GI bolts and nuts. Work includes supply & fixing of required GI flats from panel/DG set/DG Structure/High mast to earth pits for each earthing connection.
- f. The contractor shall provide end termination of the cables with lugs and glands of suitable size at DG set, AMF panel, T-3 shed panel, gate no:9 panel and High mast 2 feeder panel.

## Part –V (shifting of 30meter High mast)

### 1. Scope of work:

#### a. Civil foundation

The firm shall design the high mast foundation to install the existing High mast based on soil bearing capacity (SBC) test results conducted at their own cost and to withstand minimum wind speed of 180 Km/hr. The firm shall obtain the PCD and other details of the existing High mast for designing the foundation . The firm shall furnish necessary civil foundation drawing for approval of MPA. The contractor shall ensure correct vertical and horizontal alignment of the foundation bolts while carryout the foundation works by using suitable steel template. Necessary electrical power supply required for erecting towers will be provided by MPA at free of cost at nearest possible point. However, water arrangement and conveying the same to site shall be in the scope of contractor.

#### **Note:**

The Tenderer shall inspect the site and get acquainted with the nature of civil foundation that is required for erecting the High Mast before offering their Tender.

The contractor shall re-do any damage to the existing pavers while carrying out works

#### b. Cable Laying and Handling

This includes laying of LT XLPE armoured cables of 1.1KV Grade 4C X 70sq.mm and 4C X 35 sq.mm through excavated trench. This work includes all labour, tools tackles necessary for satisfactory completion of the work.

#### c. Protection Guard/Fencing

Providing of Protection Guard/Fencing surrounding the high mast with suitable size MS channel of not less than ISMC 150 vertically at four corners and 2 horizontal runs of MS angles ISA 75, 10 mm thickness. The height of guard shall not be less than 1.5 Mtr. from the ground level. The foundation of the channels shall be with cement concrete with muffing not less than 45 cm. above ground level. All the members of the guard shall be pre-treated and then painted with two coats of red oxide primer and two coats of yellow epoxy finish paint. The protected area surrounding the High Mast in no case shall be less than 2.5 Mtr. X 2.5 Mtr.

#### d. Erection of High mast:

Erection of removed 30 Meter High Mast Tower shall be carried out on the newly constructed foundation. All the Electrical fittings and distribution boxes shall be mounted on the Lantern carriage and required wiring has to be carried out. Balancing of the lantern carriage shall be ensured. The firm shall terminate the control and power cable from high mast to Junction Box control panel. Work also including supply and fixing of required materials such as glands lugs etc. complete in all respect. Connections from the top junction box to the individual luminaires shall be made by using 3 core 2.5 sq. mm flexible PVC copper cables. The

electrical connections from the bottom to the top shall be made by using trailing cable.

## **PART VI (Shifting and Re-Installation of DG set)**

### **Dismantling, Shifting and Re-Installation of 160 KVA Greaves Make DG set**

#### **SCOPE OF WORK**

01 no DG set of Greaves make installed near gate no.9 is to be shifted and relocated along with exhaust chimney and other accessories at location near T3 shed /new toll plaza area. The size of DG set is 3.5 (L) x 1.5 (W) x 2 mtrs. (H) and weight is approx. 02 to 03 tons.

The following works are to be carried out by contractor.

1. Shifting, transportation and installation of Diesel Generator (DG) set from existing place (shed at near gate no. 9) to location near T3 shed along with other accessories as per the requirement and instruction of the Port official.
2. Removing of Exhaust chimney (Height - 10 mtrs.) foundation H.T. stud bolts of size M 20 x 200mm -12 nos. Shifting, transportation and installation at location near T3 shed.
3. Dismantling and shifting of exhaust pipes connected to chimney and DG set after removing flange bolts. If bolts are corroded /damaged are to be replaced with new one by the contractor.
4. Removing and shifting of Diesel tank including mounted structure.
5. Dismantling, shifting and reinstallation of AMF panel, complete with electrical connection.
6. Installation of DG set on platform, Diesel tank with existing structure, erecting chimney on PCC foundation with new grouted H. T. stud bolts of Grade 10.8 of size M 20 of sufficient length -12 nos. required for grouting purpose along with nuts and washers are to be supplied by contractor. All civil work in connection with chimney PCC foundation and grouting is in contractor scope.
7. After installing of DG set and Chimney, assembling of exhaust pipes to DG set and other removed accessories connected to DG set are to be fitted as per requirement.
8. Alignment of DG set is to be carried out.
9. After successful installation required trial to be carried out to the satisfaction of port official.

10. All equipment, tools and tackles that are required for satisfactorily shifting and commissioning of DG including supply of required manpower etc. is to be included in contractor scope. No extra cost/material will be provided by MPA and contractor has to bear it in his own cost for successful trial of DG set at designated location near T3 shed.
11. Harbour entry pass will be provided on chargeable basis.
12. Any other ancillary work, welding work related to but not mentioned above, required for satisfactorily completion of the job should be carried out by the contractor. Wherever welding work is carried same to be painted with primer paint.
13. If crane is required from MPA shall be on chargeable basis as per scale of rates if crane is available.
14. All PPE should be wear by representatives attending dismantling, shifting and installation work and all necessary safety precautions to be taken by the contractor while carrying out above works.
15. Party should inspect the site and working conditions before quoting for the work.
16. Any damage taking place in course of above work to port property, including said DG set unit is to be rectified by contractor to the satisfaction of port official.

**PRICE SCHEDULE (BILL OF QUANTITIES)****PART I (Providing CCTV)**

<b>Sr No</b>	<b>Description</b>	<b>HSN Code</b>	<b>Unit</b>	<b>Qty</b>	<b>Rate (Rs)</b>	<b>Amount (Rs)</b>
1.	Supply, Installation, testing and commissioning of IP based bullet 4MP outdoor type Camera as per technical specification					
	a) Supply		No.	4		
	b) Installation, testing and commissioning		No.	4		
2.	Supply, Installation, testing and commissioning of Network Video Recorder of minimum 8 Channel along with 4TB Hard disk for recording and storage. as per technical specification					
	a) Supply		Nos.	2		
	b) Installation, testing and commissioning		Nos.	2		
3	Supply, Installation, Testing and commissioning of 32" Display monitor as per technical specification at Schedule-'A'					
	a)Supply		Nos.	2		
	b)Installation, testing and Commissioning		Nos.	2		
4	Supply, installation , Testing & Commissioning of 8 Port 10/100/1000 Giga port switch as per technical specification at Schedule-'A'					

	a)supply		Nos.	1		
	b)Installation, Testing and Commissioning		Nos.	1		
5	Supply, Installation, testing and commissioning of Wireless Transmitters and Receivers (AP) with complete accessories, antennas, Power supply units, fitting arrangements, etc as per technical specifications					
	Supply		Set	1		
	Installation		Set	1		
6	Supply, Installation, testing and commissioning of 6 meter lattice Tower with Self climbing ladder as per technical specification					
	Supply		Nos	1		
	Erection and commissioning		Nos	1		
7	Supply, Installation, Testing & Commissioning of 1 KVA online UPS as per technical specification at Schedule-'A'					
	Supply		Nos.	1		
	b)Installation, Testing & Commissioning		Nos.	1		
8.	Supply of CAT 6 Indoor Cable as per Technical specification at schedule-A		Mtr	1000		
9	Supply and Laying of Suitable size casing capping for CAT-6 cable, power cable as per technical specification					
	a) Supply		Mtr	800		
	b) Laying along the wall/ceiling etc		Mtr	900		
10	Supply, and Installation of Rack'					
	a) Supply		No	2		
	b) Installation		No	2		



11	Accessories like screw, clamp, bends, PVC power cable, Switch Socket, RJ45 etc.		LS	1		
12	Configuration of all equipment, supervision and documentation		LS	1		
					<b>Sub Total</b>	

**Sub Total (In Words) of Part I**

Rupees \_\_\_\_\_

**PART II (Providing Telephones)**

Sr No	Description	HSN Code	Unit	Qty	Rate (Rs)	Amount (Rs)
3.	Supply, Installation testing, commissioning and handing over of Telephones.					
	c) Supply		No.	5		
	d) Installation, testing and commissioning		No.	5		
4.	Supply, laying, commissioning and handing over of 100 pair telephone cable					
	c) Supply		Mtrs.	350		
	d) Laying in existing trench by opening the cover		Mtrs	50		
	c)Laying in Road/Ramp crossing (Excavation & pipes will be provided by Port)		Mtrs.	40		
	d) Laying along existing road by digging ½ meter deep trench (Excavation will be provided by Port)		Mtrs	180		
	e) Laying by clamping along the existing wall.		Mtrs	80		

3	Supply, laying, commissioning and handing over of 50 pair telephone cable					
	a)Supply		Mtrs	250		
	b) Laying in existing trench		Mtrs	250		
4	Supply, Installation, testing, commissioning and handing over of 24 Port extension card for remote shelf.					
	a)supply		Nos.	1		
	b)Installation, Testing and Commissioning		Nos.	1		
5	Supply Installation, testing, commissioning and handing over of outdoor PVC Junction Boxes					
	a)Supply		Nos	2		
	b)Installation			2		
6	Supply Installation, testing, commissioning and handing over of 100 pair Crones as per standard design.					
	a) Supply		No	1		
	b) Installation		No	1		
7	Supply Installation, testing, commissioning and handing over of 50 pair Crones as per standard design.					
	a) Supply		No	1		
	b) Installation		No	1		
8	Supply, laying, testing, commissioning and handing over of 5 pair telephone cable.					
	a)Supply		Mtrs.	100		
	b)Laying		Mtrs.	100		

9	Supply and Laying of Suitable size casing capping for laying 5 pair cable					
	c) Supply		Mtr	100		
	d) Laying along the wall/ceiling etc		Mtr	100		
10	Supply of single line Rosette Boxes		Nos.	20		
11	Accessories like screw, clamp, bends, PVC power cable, Switch Socket, RJ45 etc.		LS	1		
<b>Sub TOTAL</b>						

**Sub Total (In Words) PART II**

Rupees \_\_\_\_\_

**PART III (Providing Air Conditioners)**

Sr. No.	Item description	HSN/ SAC Code	Qty.	Unit	Rate/ Unit (Rs.)	Amount
1	Supply, installation, testing and commissioning of 1.5 TR Split inverter air-conditioner 5 star rated, single phase. including all accessories, voltage stabilizer and as per Scope & technical specification at Schedule 'A'					
a	Supply		03	nos		
b	Installation, testing and commissioning		03	nos		
<b>Sub TOTAL</b>						

**Sub Total (In Words) PART III**

Rupees \_\_\_\_\_ only

**PART IV (Power Cable)**

Sr no	Description of Work	HSN/ SAC Code	Qty	Unit	Rate/ unit (Rs.)	Amount (Rs.)
1	Excavation of trench in hard soil 1.0 meter deep and 0.6 meter width in hard soil and Back filling of trench.		250	RM		
2	Supply of 4 corex120 sq.mm LT, 1.1 KV grade aluminium XLPE armoured cable.		750	Mtrs.		
3	Supply of 4 corex35 sq.mm LT, 1.1 KV grade aluminium XLPE armoured cable.		300	Mtrs.		
4	Laying of LT cable of size 4 core x 120 sq.mm					
i)	In RCC trench		600	Mtrs.		
ii)	In excavated trench		180	Mtrs.		
iii)	Through GI pipes at road crossing		60	Mtrs.		
iii)	Clamping on wall with GI saddles		50	Mtrs.		
5	Laying 2 RUNS OF of LT cable of size 4 core x 35sq.mm in trench provide by the Port.		300	RM		
6	Providing GI pipe earthing as per scope of work		16	Nos.		
7	End Termination of LT 4 core x 120 sq.mm		6	Nos.		

	cables by providing suitable glands and lug.					
8	End Termination of LT 4 core x 35 sq.mm cables by providing suitable glands and lug.		6	Nos.		
<b>Sub TOTAL</b>						

**Sub Total (In Words) PART IV**

Rupees \_\_\_\_\_ only

**PART V (Shifting of High mast)**

Sr no	Description of Work	HSN/ SAC Code	Qty	Unit	Rate/ unit (Rs.)	Amount (Rs.)
1	Design and casting of suitable foundation for the High mast confirming to SBC results. The foundation Height of the High mast shall be 500mm above the existing nearby ground level		1	No.		
11	Design & construction of Protection Guard/Fencing surrounding the high mast with suitable size MS channel and MS angles as per the Technical specifications		1	no		
12	Installation and commissioning of the		1	no		

	existing high mast control panel by terminating the required cables such as Incomer, lighting and motor. Work also including supply and fixing of required materials such as glands lugs etc. complete in all respect.					
13	Providing RCC/Stone masonry foundation complete in all respect including plastering for the High Mast control Panel and the dimension .The gap between the pillars is 350 mm for cable connection to the control panel. The foundation starts 300mm below the ground after making 100mm stone soling and height of the foundation 750mm above the ground level and curing etc. and the panel should be stand on the well grouted Stainless steel bolts. The work shall be complete in all respect.		1	no		
14	Fixing of 16 no LED flood light luminaries Fittings , junction box with complete wiring work on existing high mast lantern carriage (Fittings and Junction boxes will be provided by the Port)		1	LS		

15	Erection, testing and commissioning of 30 mtrs high mast complete in all respect with the help of suitable equipment's		1	no		
17	Supply of 5 core 4 sq mm copper trailing cable . The cable shall be EPR insulated and PCP sheathed to get flexibility and endurance with Rodent proof coating		35	mtr		
<b>Sub TOTAL</b>						

**Sub Total (In Words) PART V**

Rupees \_\_\_\_\_ only

**PART VI (Shifting and Re-Installation of DG set)**

Sr. No.	Description	SAC Code	Unit	Quantity	Rate in Rs	Total Amount in Rs.
1	Dismantling ,Shifting\ transportation and re- installation of Diesel Generator (DG) set along with chimney and other accessories including Civil \electrical related works from existing place (shed at near gate no. 9 ) to location near T3 shed and successful recommissioning of DG set as per the Scope of work.		Lumsum.	01		
<b>Sub Total</b>						

**Sub Total (In Words) PART VI**

Rupees \_\_\_\_\_ only

**GRAND TOTAL (PART I + PART II + PART III + PART IV+ PART V+ PART VI)**

**GRAND Total**

**In Figure**

**In Words Rupees \_\_\_\_\_ only**

**Date:**

**Signature:**

**Place:**

**Name:**

**Address:**

**Office Seal of firm**

**Note: The rates quoted shall be inclusive of freight, packing & forwarding, insurance and exclusive of GST**