

**INSTALLATION/COMMISSIONING OF CCTV SYSTEMS**

**IN THE**

**OFFICE OF THE ACCOUNTANT GENERAL (A&E), TAMIL NADU**

**361, ANNA SALAI, TEYNAMPET, CHENNAI -18**

**Website: [www.agae.tn.nic.in](http://www.agae.tn.nic.in)**

**Phone Nos. 044-24324665/528**

**Email: [agaetamilnadu@cag.gov.in](mailto:agaetamilnadu@cag.gov.in)**

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## CHAPTER I

### 1.0 Objective

It is proposed to replace the existing analog cameras connected to DVR with digital cameras linked to NVR in the Office of the Accountant General (A&E), Tamil Nadu

### 1.1 System components

The proposed system consists of the following components:

1.1.1 IP based POE cameras (50nos) connected to Network Video Recorder (NVR) (32 channels 2nos)

1.1.2 Active and Passive network components

#### CHECK LIST OF DOCUMENTS TO BE SUBMITTED WITH TENDER

| <b>S.No</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b><u>YES / NO</u></b> |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 1           | Earnest money deposit of Rs.100000/- in the form of a Demand Draft in favour of PAO/IAD. (or) <b>Registration certificate</b> for exemption for Micro and Small Enterprises (MSEs) as defined in MSE procurement policy issued by the Department of Micro, Small and Medium Enterprises (MSME) or with Central Purchase Organization or concerned Ministry or Department. Acknowledgement for registration with MSME etc., will not be considered as valid document |                        |
| 2           | Post warranty Annual Maintenance Contract Cost                                                                                                                                                                                                                                                                                                                                                                                                                      |                        |
| 3           | Compliance Report                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                        |
| 4           | List of installations and customer references of similar access control systems in India, preferably from Government offices, Companies, Government bodies.                                                                                                                                                                                                                                                                                                         |                        |
| 5           | Rough CCTV system (cameras, Racks etc) placement diagram                                                                                                                                                                                                                                                                                                                                                                                                            |                        |
| 6           | Features of Cameras, NVR and NVR in-built video management software                                                                                                                                                                                                                                                                                                                                                                                                 |                        |

## **CHAPTER II**

### **2.0 Scope of work**

- 2.0 The scope of work covers the following components
- 2.1.1 Supply, installation, commissioning, conducting performance test run, training and providing documentation of the working of the CCTV system.
- 2.1.2 Laying of LAN cabling connecting the cameras with the NVR.
- 2.1.3 The Office has the right to buy only one or few or all components specified at 1.1 and to increase or decrease the quantity of the components

### **2.2 Supply**

- 2.2.1 The supply shall include cameras, NVR, active and passive network components and inbuilt NVR software for recording and managing the cameras connected to the NVR and any other equipment required for installation of CCTV system.
- 2.2.2 Until such time the equipments are successfully taken over by the office, the responsibility for the equipments and system lies with the vendor.
- 2.2.3 The vendor shall supply the complete documentation i.e., technical catalogues for various components, power/signal diagrams, test certificates, warranty certificates, user manuals etc.
- 2.2.4 The vendor should furnish complete diagram of placement of cameras, racks and routing of connecting cables
- 2.2.5 The vendor should furnish warranty certificates from the OEM for the cameras, NVRs and active network components deployed.

### **2.3 INSTALLATION, COMMISSIONING AND PERFORMANCE TEST RUN**

- 2.3.1 The vendor shall position and erect the cameras, NVR, racks and display at the locations identified by this office
- 2.3.2 The vendor shall do the inter connection cabling between cameras and NVR.
- 2.3.3 The vendor should provide all labour, cabling, tools, parts required to install the components and test to ensure functionality

### **2.4 Trial Run**

- 2.4.1 The CCTV system will be under trial run for a period of one month from the date of successful commissioning. The representatives of the Office would declare successful commissioning of the system.

## **2.5 Training**

- 2.5.1 The vendor shall provide required training to nominated officials of this office on maintenance and operational aspects of CCTV system
- 2.5.2 The vendor will provide training on any active parts and demonstrate setup/disassemble of the unit(s) described within the specification above
- 2.5.3 The vendor has to train a set of personnel of the Office for day to day management, extraction of selective period footage/complete footage from the NVR.

## **2.6 Documentation**

- 2.6.1 The vendor shall provide technical literature for each component of CCTV system. Data sheet, wiring diagram, inter-connection block diagram, Operation and Maintenance manual etc. shall also be provided
- 2.6.2 The warranty certificate, test certificates indicating codes and standards shall also be provided

## **2.7 Inspection of materials before despatch**

This office at its option may send their representative to inspect the materials/components/spares supplies against this order at vendor's works. Vendor has to extend all necessary test facilities to carry out inspection at their works at no extra cost.

## Chapter III - Terms and conditions

### 3.1 Acceptance / Rejection of bid

- 3.1.1 This office reserves the right to accept tender in whole or in part or, reject any or all tenders without assigning any reason whatsoever.
- 3.1.2 Further, this office shall not be bound to accept the lowest tender and acceptance of tender may also be based on components with technically sound features. The features of Cameras, NVR and NVR in-built video management software should be enclosed along with the bid. In this regard, the decision of this office shall be final.
- 3.1.3 Bid documents from the vendors should be for the entire scope of work covered under this tender. Tenders with quotes for selected items shall not be entertained.
- 3.1.4 Specifications mentioned in the tender document are minimum requirements for the proposed system, however vendor may offer higher configuration over and above the requirement. Offers not meeting the minimum requirement shall be liable for rejection
- 3.1.5 The vendors should enclose a rough CCTV system (cameras, Racks etc) placement diagram along with the tender documents

### 3.2 Delivery of Material

- 3.2.1 Equipments, materials shall be delivered at Office of the Accountant General (A&E),361, Anna salai, Teynampet, Chennai 18.
- 3.2.2 Packing & unpacking, Loading & unloading of material shall be in vendors scope

### 3.3 Work completion period

Entire supplies, installation and commissioning shall be completed within 45 days from the date of placement of Work order.

### 3.4 Additional notes

- 3.4.1 The vendor must indicate the make and model item wise.
- 3.4.2 The vendor shall provide list of installations and customer references of similar installation of CCTV systems in India, preferably from Government offices, Companies, Government bodies.
- 3.4.3 The vendor's entire staff shall follow the instructions of this office for taking up any job inside this office.

### 3.5 Earnest Money Deposit:

An earnest money deposit (EMD) of Rs.100000/- has to be furnished by all the bidders. EMD should be in the form of a DD in favour of PAO/IAD. Bids without EMD will be rejected. Bid security (EMD) is exempted for Micro and Small Enterprises (MSEs) as defined in MSE procurement policy issued by the Department of Micro, Small and Medium Enterprises (MSME) or are registered with Central Purchase Organization or concerned Ministry or Department. Registration certificate should be

enclosed. Acknowledgement for registration will not be accepted as a valid document and will not be considered

### **3.6 Composite Performance Bank Guarantee (CPBG)**

- 3.6.1 The bidder (s) with whom the contract is finalized and intimation so given will have to submit either an Account Payee Demand Draft in favour of PAO/IAD, or Performance Bank Guarantee for an amount equivalent to 10 % of the Work order / Contract value, which shall be valid for a minimum period of 2 months beyond the expiry of the warranty period. In case of CPBG for passive components the same should be valid for a minimum period of 26months beyond trial run of the CCTV system.
- 3.6.2 The bank guarantee on stamp paper of requisite value shall be accepted only from Scheduled Indian Banks (other than co-operative banks). All Bank Guarantee shall be unconditional and en cashable on presentation to the issuing Bank.

### **3.7 Warranty obligations**

The cameras and NVR should be supplied with a minimum of two year warranty, the hard disks with minimum 3 years warranty and active network components with a minimum of 5 year warranty. During the warranty period, the vendor shall attend trouble-shooting of any system malfunctioning /defective functioning/equipment failure etc. within 24 hours. Any part if found defective shall be replaced/repaired free of cost and the performance as guaranteed in the tender should be maintained.

### **3.8 Post-Warranty Annual Maintenance Contract(AMC)**

- 3.8.1 It is mandatory for all the vendors to provide AMC support to this office for all supplied component & whole system for a period of 5 years, beyond the completion of regular warranty period in respect of each components from completion of trial run. Vendors shall therefore, must quote charges towards AMC as part of this offer (comprehensive and semi-comprehensive), without **which the bid will be considered invalid & summarily rejected.** The post-warranty AMC amount will be reckoned for evaluation of the bid. A separate PO will be placed for AMC after completion of warranty period.
- 3.8.2 The Bidder will have to depute his engineer for preventive check of the system atleast once in a month during AMC/as and when required for attending defects/problems communicated.

### **3.9 Bank Guarantee for AMC**

Vendor shall furnish separate Bank Guarantee (BG) equivalent to the rate quoted for 5 years Annual Maintenance Contract for each item i.e. Cameras, NVR, hard disks and active network component. This BG shall be submitted 2 months before the expiry of warranty period failing which the Performance Bank Guarantee shall stand forfeited. BG for AMC shall be valid for 63 months from the date of expiry of warranty period.

### **3.10 Payment Terms:**

Payment shall be made after the successful installation, Testing and Commissioning of the system.

3.11 Office reserves the right to make any modifications in the scope and conditions of tender on or before 14/12/2018. Vendors are required to view our Web site viz., [www.agae.tn.nic.in](http://www.agae.tn.nic.in) for any updation in this regard before site inspection.

### **3.12 Bids to be forwarded in sealed envelope superscribed as “TENDER FOR CCTV SYSTEM” and addressed to**

Smt. R. NARMADHA, IA &AS  
Sr. Deputy Accountant General (Admn)  
Office of the Accountant General (A&E), Tamilnadu  
361 Anna Salai, Chennai – 600 018

3.13 **Site Inspection and meeting dates:** The vendors can inspect the site on 18/12/2018 – 11.00AM Monday. The Office will arrange a meeting with the vendors at 11AM on 19/12/2018.

3.14 **Last date for submission of bids :** 27/12/2018 by 5.30pm



**Chapter IV – Specifications & Allied Technical details**

**32 CHANNEL NVR – Makes : HONEYWELL/BOSCH/AXIS/PELCO/PANASONIC/SONY**

| S.No | MINIMUM SPECIFICATIONS OR BETTER |                                                                                                                                                                                                                                                                                                | Compliance |
|------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 1    | Main Processor                   | Quad core or above                                                                                                                                                                                                                                                                             |            |
| 2    | No. of HDD SATA BAY              | 8 nos (3.5" HDD) with support for upto 8TB HDD per bay                                                                                                                                                                                                                                         |            |
| 3    | Connector                        | Ethernet RJ-45, 10 / 100 / 1000 Mbps                                                                                                                                                                                                                                                           |            |
| 4    | RAID                             | RAID 0/1/5/6/10                                                                                                                                                                                                                                                                                |            |
| 5    | Recording compression            | H.265/H.264/MJPEG/MPEG4                                                                                                                                                                                                                                                                        |            |
| 6    | Live view, preview and playback  | Upto 12MP                                                                                                                                                                                                                                                                                      |            |
| 7    | Operating System                 | Windows / Linux                                                                                                                                                                                                                                                                                |            |
| 8    | Video Input                      | 32 Channels IP                                                                                                                                                                                                                                                                                 |            |
| 9    | Record Bit Rate                  | 320 Mbps or above                                                                                                                                                                                                                                                                              |            |
| 10   | Number of users                  | 128 or above                                                                                                                                                                                                                                                                                   |            |
| 11   | NVR Software for management      | In-built or pre-loaded with free license for 32 channels                                                                                                                                                                                                                                       |            |
| 12   | Resolution                       | <b>12 MP</b> (4000 × 3000); <b>8 MP</b> (3840 × 2160); <b>6 MP</b> (3072 × 2048); <b>5 MP</b> (2560 × 1920); <b>4 MP</b> (2560 × 1440); <b>3 MP</b> (2048 × 1520); <b>1080p</b> (1920 × 1080); <b>720p</b> (1280 × 720); <b>D1</b> (704 × 576 / 704 × 480); <b>CIF</b> (352 × 288 / 352 × 240) |            |
| 13   | Protocols supported              | HTTP, TCP/IP, IPv4/IPv6, UPnP, RTSP, UDP, SMTP, NTP, DHCP, DNS, IP Filter, PPPoE, DDNS, FTP, Alarm Server, IP Search, P2P                                                                                                                                                                      |            |

**SURVEILLANCE HARD DISK**

**Makes : Seagate / Western Digital – Should be suitable for the NVR MODEL**

| S.No | MINIMUM SPECIFICATIONS OR BETTER |                 | Compliance |
|------|----------------------------------|-----------------|------------|
| 1    | Connectivity                     | SATA            |            |
| 2    | Form Factor                      | 3.5 inch        |            |
| 3    | Format Capacity                  | 8 TB            |            |
| 4    | RPM                              | 5400 or above   |            |
| 5    | Interface transfer rate          | 6 Gb/s or above |            |

**Core Switch - Makes: HP, ALLIED TELESIS, CISCO**

| S. No | PARAMETER   | REQUIRMENT                                                                                                                                                                                    | COMPLIANCE (YES / NO) |
|-------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| 1     | No of ports | i) 24 x 10/100/1000 Base -X port with additional 4 x 1/10 G SFP+ ports, 4x 10G SFP+ ports should also support for 1G SFP based on network requirements.                                       |                       |
|       |             | ii) Should support for active/active clustering, VSS or equivalent technology for higher availability of Layer 2 and Layer 3 including video applications with clustering bandwidth of 40Gbps |                       |
|       |             | iii) Should come with Internal redundant power supplies for providing better reliability and continual delivery of essential services                                                         |                       |
| 2     | L2 Features | i) Supports for IEEE 802.3ac, IEEE 802.3az, IEEE 802.1ab, IEEE 802.3ad IEEE 802.1Q, IEEE 802.1s, IEEE 802.1w, IEEE 802.1D                                                                     |                       |
|       |             | ii) Switch must support G.8032 or equivalent ring protection technology for sub 50ms (or lower ) for seamless recovery                                                                        |                       |
| 3     | L3 Features | Static routing, RIP, RIPng, OSPF, OSPFv3, PIM v4 SM, DM, SSM, DHCP & DNS client and relay for both IPv4 and IPv6 (dual stack) based on network requirements                                   |                       |
| 4     | Performance | Should support for following parameters                                                                                                                                                       |                       |
|       |             | i) MAC address 16K entries                                                                                                                                                                    |                       |
|       |             | ii) Jumbo frames 10KB                                                                                                                                                                         |                       |
|       |             | iii) Priority Queues 8                                                                                                                                                                        |                       |
| 5     | Multicast   | iv) Simultaneous VLANs 4K                                                                                                                                                                     |                       |
|       |             | IGMP snooping v1 , v2 and v3, MLD snooping (v1 and v2)                                                                                                                                        |                       |

|    |                               |                                                                                                                                                                                                                                                                                                                                                   |  |
|----|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 6  | Security Features             | Should support for ACLs based on L3 and L4 headers, DHCP snooping, DHCPv4 (Snooping, server/ client), Dynamic ARP Inspection (DIP), RADIUS, TACACS+, SSL, SSH, SSL v2 and v3, SFTP, SNMP, NTP, Port Mirroring, Denial of Service (DoS) protection and Tri-authentication such as MAC-based , web-based and IEEE 802.1x port based authentications |  |
| 7  | Management                    | i) SNMPv1, v2c and v3, TFTP, Web GUI, CLI, USB or equivalent memory card, IPv4 and IPv6 management features.                                                                                                                                                                                                                                      |  |
|    |                               | ii) Switch should support for simplified management features such as auto backup, auto upgrade, auto-provisioning and auto recovery enabling plug-and-play networking and easy centralized management solutions                                                                                                                                   |  |
| 8  | Monitoring                    | i) sFlow or an equal industry standard technology for monitoring high speed switched networks.                                                                                                                                                                                                                                                    |  |
|    |                               | ii) Switch should support for in built Layer 1 monitoring capability for end to end security monitoring to avoid any drops or security breach on the Fiber uplink links                                                                                                                                                                           |  |
| 9  | Quality of Services           | i) low latency with wire speed traffic classification essential for real time streaming and real time Video and voice applications                                                                                                                                                                                                                |  |
|    |                               | ii) Should support for IEEE 802.1p standard, Policy-based QoS based on VLAN, port, MAC and general packet classifiers                                                                                                                                                                                                                             |  |
| 10 | Switching Capacity            | Non blocking switching and wire speed forwarding rate                                                                                                                                                                                                                                                                                             |  |
| 11 | Certification and Compliances | UL/IEC/EN 60950-1; FCC and RoHS                                                                                                                                                                                                                                                                                                                   |  |

**SFP MODULE - Makes: HP, ALLIED TELESIS, CISCO**

| S. No | PARAMETER      | REQUIRMENT           | COMPLIANCE (YES / NO) |
|-------|----------------|----------------------|-----------------------|
| 1     | COPPER GIGABIT | 10/100/1000T (100 M) |                       |
| 2     | FIBER GIGABIT  | LC SMF 10 KM         |                       |
| 3     | FIBER GIGABIT  | LC MMF 220-550 M     |                       |

**8 Port PoE Switch - Makes: HP, ALLIED TELESIS, CISCO**

| S. No | PARAMETER                     | REQUIRMENT                                                                                                                                                                                                                                                                                                                                | COMPLIANCE (YES / NO) |
|-------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| 1     | No of ports                   | 8 10/100/1000 Base-T and additional 2 1G Base-X ports. Should support minimum 120 watts poe budget that supports 802.3at                                                                                                                                                                                                                  |                       |
| 2     | L2 Features                   | Should support STP, RSTP, MSTP, IGMP v1/v2/v3 snooping, loop protection, STP root guard, Voice VLAN, loop protection, MLD snooping (MLDv1 and v2), IEEE 802.3ac, IEEE 802.1v, 16k MAC Table or more, PVST+ compatibility mode, RIP, static routing, capable to support IEEE 802.1Q, IEEE 802.1ad Provider bridges (VLAN stacking, Q-in-Q) |                       |
| 3     | Resiliency                    | Should support IEEE 802.17/equivalent for sub 50ms ring protection                                                                                                                                                                                                                                                                        |                       |
| 4     | Security                      | Should support ACL, DHCP (relay and client), IP Source guard, DAI, Private VLAN, Authentication ( MAC, Web and IEEE 802.3x), sflow, SSLv2 and SSLv3, TACACS+, LAG, IP precedence and DiffServ marking based on layer 2, 3 and 4 headers                                                                                                   |                       |
| 5     | Management                    | CLI, GUI, USB interface for taking backup of software release files configurations, Digital optical monitoring, Time Domain Reflectometry/ equivalent, DHCPv6, DNSv6, Telnetv6 and SSHv6, NTPv6 client and server, RMON 4 groups, SNMPv3, LLDP-MED, IEEE 802.3az, IPv4 and IPv6 support, SDN openflow v1.3 ready                          |                       |
| 6     |                               | Should support single IP management of min 16 switches for ease of management.                                                                                                                                                                                                                                                            |                       |
| 7     |                               | Should support Unidirectional Link Detection (UDLD) or equivalent to detect unidirectional links caused by incorrect fibre optic wiring or port faults and disable on fibre optics interfaces                                                                                                                                             |                       |
| 8     | Operating Tempeature          | Should inherently support operating temperature range of 0-50C                                                                                                                                                                                                                                                                            |                       |
| 9     | Certification and Compliances | Should support UL, cUL, UL-EU, UL60950-1, CAN/CSA-C22.2 No. 60950-1-03, EN60950-1, EN60825-1, AS/NZS 60950                                                                                                                                                                                                                                |                       |
| 10    | Switching Capacity            | Non blocking switching and wire speed forwarding rate                                                                                                                                                                                                                                                                                     |                       |

**16 Port PoE Switch - Makes: HP, ALLIED TELESIS, CISCO**

| S. No | PARAMETER                     | REQUIRMENT                                                                                                                                                                                                                                                                                                                                | COMPLIANCE (YES / NO) |
|-------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| 1     | No of ports                   | 16 10/100/1000 Base-T and additional 2 1G Base-X ports. Should support minimum 245 watts poe budget that supports 802.3at                                                                                                                                                                                                                 |                       |
| 2     | L2 Features                   | Should support STP, RSTP, MSTP, IGMP v1/v2/v3 snooping, loop protection, STP root guard, Voice VLAN, loop protection, MLD snooping (MLDv1 and v2), IEEE 802.3ac, IEEE 802.1v, 16k MAC Table or more, PVST+ compatibility mode, RIP, static routing, capable to support IEEE 802.1Q, IEEE 802.1ad Provider bridges (VLAN stacking, Q-in-Q) |                       |
| 3     | Resiliency                    | Should support IEEE 802.17/equivalent for sub 50ms ring protection                                                                                                                                                                                                                                                                        |                       |
| 4     | Security                      | Should support ACL, DHCP (relay and client), IP Source guard, DAI, Private VLAN, Authentication ( MAC, Web and IEEE 802.3x), sflow, SSLv2 and SSLv3, TACACS+, LAG, IP precedence and DiffServ marking based on layer 2, 3 and 4 headers                                                                                                   |                       |
| 5     | Management                    | CLI, GUI, USB interface for taking backup of software release files configurations, Digital optical monitoring, Time Domain Reflectometry/ equivalent, DHCPv6, DNSv6, Telnetv6 and SSHv6, NTPv6 client and server, RMON 4 groups, SNMPv3, LLDP-MED, IEEE 802.3az, IPv4 and IPv6 support, SDN openflow v1.3 ready                          |                       |
| 6     |                               | Should support single IP management of min 16 switches for ease of management.                                                                                                                                                                                                                                                            |                       |
| 7     |                               | Should support Unidirectional Link Detection (UDLD) or equivalent to detect unidirectional links caused by incorrect fibre optic wiring or port faults and disable on fibre optics interfaces                                                                                                                                             |                       |
| 8     | Operating Temepature          | Should inherently support operating temperature range of 0-50C                                                                                                                                                                                                                                                                            |                       |
| 9     | Certification and Compliances | Should support UL, cUL, UL-EU, UL60950-1, CAN/CSA-C22.2 No. 60950-1-03, EN60950-1, EN60825-1, AS/NZS 60950                                                                                                                                                                                                                                |                       |
| 10    | Switching Capacity            | Non blocking switching and wire speed forwarding rate                                                                                                                                                                                                                                                                                     |                       |

**8 Port Industrial PoE Switch - Makes: HP, ALLIED TELESIS, CISCO**

| S. No | PARAMETER                | REQUIRMENT                                                                                                                               | COMPLIANCE (YES / NO) |
|-------|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| 1     | No of ports              | Outdoor Din Rail mountable Industrial grade switch with Min of 8 x 10/100/1000 Base-T POe/POE+ and 2 x 100/1000 SFP combo ports          |                       |
|       |                          | Suitable Internal or External AC/ DC power Supply Unit with redundant power inputs, with power budget of 120W minimum                    |                       |
| 2     | PoE+                     | POE + standards should be in accordance with IEEE 802.3af and IEEE 802.3at standards.                                                    |                       |
| 3     | L2 Features              | Supports for IEEE 802.3ac, IEEE 802.3az, IEEE 802.1ab, IEEE 802.3ad IEEE 802.1Q, IEEE 802.1s, IEEE 802.1w, IEEE 802.1D                   |                       |
|       |                          | Switch must support ring protection technology for sub 20ms (or lower ) for seamless recovery                                            |                       |
| 4     | Performance              | Should support for following parameters                                                                                                  |                       |
|       |                          | i) MAC address 8K entries                                                                                                                |                       |
|       |                          | ii) Jumbo frames 9 KB                                                                                                                    |                       |
|       |                          | iii) Priority Queues 8                                                                                                                   |                       |
|       |                          | iv) Supports 4094 configurable VLANs and 255 layer 2 multicast entries                                                                   |                       |
| 5     | Multicast                | Supports for both IGMP snooping v1 , v2 and v3, MLD snooping (v1 and v2)                                                                 |                       |
| 6     | Security Features        | Supports for RADIUS, SSL, SSH, SSL v2 and v3, NTP, Port Mirroring, and port security based on MAC, web-based and IEEE 802.1x             |                       |
| 7     | Management               | SNMPv1, v2c and v3, TFTP, Web GUI, CLI for both IPv4 and IPv6 management features                                                        |                       |
| 8     | Monitoring               | sFlow or an equal industry standard technology for monitoring high speed switched networks                                               |                       |
| 9     | Quality of Services      | Supports low latency with wire speed traffic classification essential for real time streaming and real time Video and voice applications |                       |
|       |                          | Should support for IEEE 802.1p standard, Policy-based QoS based on VLAN, port, MAC and general packet classifiers                        |                       |
| 10    | Switching Capacity       | Non-blocking switching and wire speed forwarding rate                                                                                    |                       |
| 11    | Operating Temperature    | Min of -40 to 75 Degrees or more                                                                                                         |                       |
| 12    | Operating Humidity (non- | 10% to 95% or better                                                                                                                     |                       |

|    |                               |                                                                    |  |
|----|-------------------------------|--------------------------------------------------------------------|--|
|    | condensing)                   |                                                                    |  |
| 13 | Certifications and compliance | EN5022, EN60715, ROHS, WEEE, IP30 Protection and DIN Rail Mounting |  |

**43" LED Display Make: Samsung/LG/Panasonic**

| Sl. No. | Parameters/ Features  | Required Specifications                                                                              | Compliance (YES / NO) |
|---------|-----------------------|------------------------------------------------------------------------------------------------------|-----------------------|
| 1       | Display Size          | 43"                                                                                                  |                       |
| 2       | Resolution            | 1920*1080                                                                                            |                       |
| 3       | Screen Aspect         | 16:09                                                                                                |                       |
| 4       | Brightness            | 350 nits or higher                                                                                   |                       |
| 5       | Stereo Audio In       | RCA Pin Type × 2                                                                                     |                       |
| 6       | HDMI                  | 3 or more                                                                                            |                       |
| 7       | USB                   | USB 2.0 × 2 or more                                                                                  |                       |
| 8       | Power supply          | 230 V                                                                                                |                       |
| 9       | Operating Environment | 0 °C to 40 °C or better                                                                              |                       |
| 10      | Backlight Scanning    | 100 Hz or more                                                                                       |                       |
| 11      | Other Accesseries     | Wall Mount kit Quick Setup<br>Guide, warranty card, application CD, power cord and Other accesseries |                       |

**IP CAMERA (25m) Rugged Mini Dome compatible for NVR**

**Makes : HONEYWELL/BOSCH/AXIS/PELCO/PANASONIC/SONY**

| S.No | MINIMUM SPECIFICATIONS OR BETTER                                                                  | Compliance |
|------|---------------------------------------------------------------------------------------------------|------------|
| 1    | VIDEO STANDARD NTSC/PAL                                                                           |            |
| 2    | SCANNING SYSTEM Progressive scan                                                                  |            |
| 3    | IMAGE SENSOR 1/3" 4 MP CMOS                                                                       |            |
| 4    | NUMBER OF PIXELS (H × V) 2688 × 1520                                                              |            |
| 5    | MINIMUM ILLUMINATION 0.08 lux color @ F2.0 (Color, 1/3s, 30 IRE) 0 lux B/W with IR LEDs on @ F2.0 |            |
| 6    | S/N RATIO > 45 dB                                                                                 |            |
| 7    | ELECTRONIC SHUTTER SPEED 1/3(4) – 1/100,000 s                                                     |            |
| 8    | IR DISTANCE Up to 82 ft (25 m), depending on scene reflectance                                    |            |
| 9    | SMART IR Auto/Manual                                                                              |            |
| 10   | DAY/NIGHT Auto (ICR)/Color/BW                                                                     |            |
| 11   | BACKLIGHT COMPENSATION BLC/HLC/WDR (120 dB)                                                       |            |
| 12   | WHITE BALANCE Auto/Natural/Street Lamp/Outdoor/Manual                                             |            |

|    |                                                                                                                                                                                                     |  |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 13 | GAIN CONTROL Auto/Manual                                                                                                                                                                            |  |
| 14 | WIDE DYNAMIC RANGE True WDR (120 dB)                                                                                                                                                                |  |
| 15 | NOISE REDUCTION 3D DNR                                                                                                                                                                              |  |
| 16 | LENS 2.8 mm, fixed, F2.0                                                                                                                                                                            |  |
| 17 | ANGLE OF VIEW 104°/87° (H), 57°/48° (V)                                                                                                                                                             |  |
| 18 | VIDEO COMPRESSION H.265+/H.265/H.264+/H.264                                                                                                                                                         |  |
| 19 | RESOLUTION 4 MP (2688×1520), QHD (2560×1440), 3 MP (2304×1296), 1080p (1920×1080), SXGA (1280×1024), 1.3 MP (1280×960), 720p (1280×720), D1 (704×576/704×480), VGA (640×480), CIF (352×288/352×240) |  |
| 20 | FRAME RATE 4 MP at 1 – 20fps, 3 MP at 1 – 25/30fps D1/CIF at 1 – 25/30fps                                                                                                                           |  |
| 21 | BIT RATE CONTROL CBR/VBR                                                                                                                                                                            |  |
| 22 | BIT RATE H.265: 12K – 8448 Kbps H.264: 32K – 10240 Kbps                                                                                                                                             |  |
| 23 | NETWORK ETHERNET RJ-45 (10/100BASE-T)                                                                                                                                                               |  |
| 24 | PROTOCOLS<br>IPv4/v6, TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, HTTPS, SSL, FTP, SMTP, DHCP, PPPoE, UPnP, SNMP v2/v3, Bonjour, DNS, DDNS, IEEE 802.1X, QoS, NTP                                           |  |
| 25 | SECURITY<br>User account and password protection, HTTPS, IP filter, IEEE 802.1X, digest authentication, user access log, TLS1.2, AES-256, SSH/Telnet closed, FTP disabled                           |  |
| 26 | POWER SUPPLY PoE (802.3af) Class 0, 12 VDC                                                                                                                                                          |  |
| 27 | RELATIVE HUMIDITY Less than 95%, non-condensing                                                                                                                                                     |  |
| 28 | INGRESS PROTECTION IP66                                                                                                                                                                             |  |
| 29 | EMISSIONS FCC Part15B, EN 55032                                                                                                                                                                     |  |
| 30 | IMMUNITY EN 50130-4                                                                                                                                                                                 |  |
| 31 | SAFETY EU: EN 60950-1 North America UL listed to UL/CSA 60950-1                                                                                                                                     |  |
| 32 | ROHS EN 50581                                                                                                                                                                                       |  |

**IP CAMERA (30m) Bullet compatible for NVR**

**Makes : HONEYWELL/BOSCH/AXIS/PELCO/PANASONIC/SONY**

| S.No | MINIMUM SPECIFICATIONS OR BETTER                                                                        | Compliance |
|------|---------------------------------------------------------------------------------------------------------|------------|
| 1    | VIDEO STANDARD NTSC/PAL                                                                                 |            |
| 2    | SCANNING SYSTEM Progressive scan                                                                        |            |
| 3    | IMAGE SENSOR 1/3" 4 MP CMOS                                                                             |            |
| 4    | NUMBER OF PIXELS (H × V) 2688 × 1520                                                                    |            |
| 5    | MINIMUM ILLUMINATION<br>0.08 lux color @ F2.0 (Color, 1/3s, 30 IRE)<br>0 lux B/W with IR LEDs on @ F2.0 |            |
| 6    | S/N RATIO > 45 dB                                                                                       |            |
| 7    | ELECTRONIC SHUTTER SPEED 1/3(4) – 1/100,000 s                                                           |            |
| 8    | IR DISTANCE Up to 98 ft (30 m), depending on scene                                                      |            |



|    |                                                                                                                                                                                                                    |  |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|    | reflectance                                                                                                                                                                                                        |  |
| 9  | SMART IR Auto/Manual                                                                                                                                                                                               |  |
| 10 | DAY/NIGHT Auto (ICR)/Color/BW                                                                                                                                                                                      |  |
| 11 | BACKLIGHT COMPENSATION BLC/HLC/WDR (120 dB)                                                                                                                                                                        |  |
| 12 | WHITE BALANCE Auto/Natural/Street<br>Lamp/Outdoor/Manual                                                                                                                                                           |  |
| 13 | GAIN CONTROL Auto/Manual                                                                                                                                                                                           |  |
| 14 | WIDE DYNAMIC RANGE True WDR (120 dB)                                                                                                                                                                               |  |
| 15 | NOISE REDUCTION 3D DNR                                                                                                                                                                                             |  |
| 16 | NETWORK ETHERNET RJ-45 (10/100BASE-T)                                                                                                                                                                              |  |
| 17 | LENS 3.6 mm, fixed, F2.0                                                                                                                                                                                           |  |
| 18 | ANGLE OF VIEW 104°/87° (H), 57°/48° (V)                                                                                                                                                                            |  |
| 19 | VIDEO COMPRESSION H.265+/H.265/H.264+/H.264                                                                                                                                                                        |  |
| 20 | RESOLUTION<br>4 MP (2688×1520), QHD (2560×1440),<br>3 MP (2304×1296), 1080p (1920×1080),<br>SXGA (1280×1024), 1.3 MP (1280×960),<br>720p (1280×720), D1 (704×576/704×480),<br>VGA (640×480), CIF (352×288/352×240) |  |
| 21 | FRAME RATE<br>4 MP at 1 – 20fps, 3 MP at 1 – 25/30fps<br>D1/CIF at 1 – 25/30fps                                                                                                                                    |  |
| 22 | BIT RATE CONTROL CBR/VBR                                                                                                                                                                                           |  |
| 23 | BIT RATE<br>H.265: 12K – 8448 Kbps<br>H.264: 32K – 10240 Kbps                                                                                                                                                      |  |
| 24 | PROTOCOLS<br>IPv4/v6, TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, HTTPS,<br>SSL, FTP, SMTP, DHCP, PPPoE, UPnP, SNMP v2/v3,<br>Bonjour, DNS, DDNS, IEEE 802.1X, QoS, NTP                                                    |  |
| 25 | SECURITY<br>User account and password protection, HTTPS, IP filter,<br>IEEE 802.1X, digest authentication, user access log,<br>TLS1.2, AES-256, SSH/Telnet closed, FTP disabled                                    |  |
| 26 | POWER SUPPLY PoE (802.3af) Class 0, 12 VDC                                                                                                                                                                         |  |
| 27 | RELATIVE HUMIDITY Less than 95%, non-condensing                                                                                                                                                                    |  |
| 28 | INGRESS PROTECTION IP66                                                                                                                                                                                            |  |
| 29 | EMISSIONS FCC Part 15B, EN 55032                                                                                                                                                                                   |  |
| 30 | IMMUNITY EN 50130-4                                                                                                                                                                                                |  |
| 31 | SAFETY EU: EN 60950-1<br>North America UL listed to UL/CSA 60950-1                                                                                                                                                 |  |
| 32 | ROHS EN 50581                                                                                                                                                                                                      |  |

**IP CAMERA (50m) Bullet compatible for NVR****Makes : HONEYWELL/BOSCH/AXIS/PELCO/PANASONIC/SONY**

| S.No | MINIMUM SPECIFICATIONS OR BETTER                                                                                                                                                                    | Compliance |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 1    | VIDEO STANDARD NTSC/PAL                                                                                                                                                                             |            |
| 2    | SCANNING SYSTEM Progressive scan                                                                                                                                                                    |            |
| 3    | IMAGE SENSOR 1/3" 4 MP CMOS                                                                                                                                                                         |            |
| 4    | NUMBER OF PIXELS (H × V) 2688 × 1520                                                                                                                                                                |            |
| 5    | MINIMUM ILLUMINATION 0.03 lux color @ F1.4(Color, 1/3s, 30 IRE) 0 lux B/W with IR LEDs on @ F1.4                                                                                                    |            |
| 6    | S/N RATIO > 45 dB                                                                                                                                                                                   |            |
| 7    | ELECTRONIC SHUTTER SPEED 1/3(4) – 1/100,000 s                                                                                                                                                       |            |
| 8    | IR DISTANCE Up to 164 ft (50 m), depending on scene reflectance                                                                                                                                     |            |
| 9    | SMART IR Auto/Manual                                                                                                                                                                                |            |
| 10   | DAY/NIGHT Auto (ICR)/Color/BW                                                                                                                                                                       |            |
| 11   | BACKLIGHT COMPENSATION BLC/HLC/WDR (120 dB)                                                                                                                                                         |            |
| 12   | WHITE BALANCE Auto/Natural/Street Lamp/Outdoor/Manual                                                                                                                                               |            |
| 13   | GAIN CONTROL Auto/Manual                                                                                                                                                                            |            |
| 14   | WIDE DYNAMIC RANGE True WDR (120 dB)                                                                                                                                                                |            |
| 15   | NOISE REDUCTION 3D DNR                                                                                                                                                                              |            |
| 16   | LENS 2.7 – 13.5 mm, MFZ, F1.4                                                                                                                                                                       |            |
| 17   | ANGLE OF VIEW 104° – 28° (H), 55° – 16° (V)                                                                                                                                                         |            |
| 18   | VIDEO COMPRESSION H.265+/H.265/H.264+/H.264                                                                                                                                                         |            |
| 19   | RESOLUTION 4 MP (2688×1520), QHD (2560×1440), 3 MP (2304×1296), 1080p (1920×1080), SXGA (1280×1024), 1.3 MP (1280×960), 720p (1280×720), D1 (704×576/704×480), VGA (640×480), CIF (352×288/352×240) |            |
| 20   | FRAME RATE 4 MP at 1 – 20fps, 3 MP at 1 – 25/30fps D1/CIF at 1 – 25/30fps                                                                                                                           |            |
| 21   | BIT RATE CONTROL CBR/VBR                                                                                                                                                                            |            |
| 22   | BIT RATE H.265: 12K – 8448 Kbps / H.264: 32K – 10240 Kbps                                                                                                                                           |            |
| 23   | NETWORK ETHERNET RJ-45 (10/100BASE-T)                                                                                                                                                               |            |
| 24   | PROTOCOLS IPv4/v6, TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, HTTPS, SSL, FTP, SMTP, DHCP, PPPoE, UPnP, SNMP v2/v3, Bonjour, DNS, DDNS, IEEE 802.1X, QoS, NTP                                              |            |
| 25   | SECURITY User account and password protection, HTTPS, IP filter, IEEE 802.1X, digest authentication, user access log, TLS1.2, AES-256, SSH/Telnet closed, FTP disabled                              |            |
| 26   | POWER SUPPLY PoE (802.3af) Class 0, 12 VDC                                                                                                                                                          |            |
| 27   | RELATIVE HUMIDITY Less than 95%, non-condensing                                                                                                                                                     |            |
| 28   | INGRESS PROTECTION IP66                                                                                                                                                                             |            |
| 29   | EMISSIONS FCC Part 15B, EN 55032                                                                                                                                                                    |            |
| 30   | IMMUNITY EN 50130-4                                                                                                                                                                                 |            |

|    |                                                                 |  |
|----|-----------------------------------------------------------------|--|
| 31 | SAFETY EU: EN 60950-1 North America UL listed to UL/CSA 60950-1 |  |
| 32 | ROHS EN 50581                                                   |  |

**6U , 9U, 12U & 15U Network Rack Make: APW President/Netrack**

| Sl. No. | Required Specifications                                                                          | Compliance |
|---------|--------------------------------------------------------------------------------------------------|------------|
| 1       | RACK 19" 6U /9U/12U/15U 500mm Depth Single Section with Front Glass Door and Lock & Key facility |            |
| 2       | H/D STATIONERY SHELF -375MM D -1 No                                                              |            |
| 3       | AC DISTRIBUTION BOX 6X5 AMPS with MCB - 1No's                                                    |            |
| 4       | FAN 230VAC 90CFM - 2 No's                                                                        |            |
| 5       | The Cable inlet points at junction box should be water proof by providing rubber linings         |            |

**CAT 6 UTP Box**

**Make : Molex / Panduit (Pan Net Only) / Commscope (Systimax Only) / TE (AMP Only)**

| S.No | Parameters/ Features                                      | Required Specifications                                                                                                                                                 | Compliance |
|------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 1    | Type                                                      | Unshielded twisted pair cabling system, TIA / EIA 568-C.2 Category 6 Cabling system                                                                                     |            |
| 2    | Network support                                           | Supports ultrahigh speed data networks such as Gigabit Ethernet (1000 Base-T and 1000 Base-TX) and beyond.                                                              |            |
| 3    | TIA / EIA 568-B.1                                         | ETL Verified,                                                                                                                                                           |            |
| 4    | IEEE 802.3ab                                              | ETL verified                                                                                                                                                            |            |
| 5    | Warranty                                                  | 25-year systems warranty; Warranty to cover Bandwidth of the specified and installed cabling system, and the installation costs. Site certificate must be issued by OEM |            |
| 6    | Performance characteristics to be provided along with bid | Attenuation, Pair-to-pair and PS NEXT, ELFEXT and PSELFEXT, Return Loss, ACR and PS ACR for 4-connector channel                                                         |            |
| 7    | Manufacturer                                              | All passive cabling must be from same OEM ( UTP and Fiber)                                                                                                              |            |
| 8    | Conductors                                                | 23 AWG solid bare copper                                                                                                                                                |            |

|    |                                                           |                                                                                         |  |
|----|-----------------------------------------------------------|-----------------------------------------------------------------------------------------|--|
| 9  | Insulation                                                | Polyethylene                                                                            |  |
| 10 | Approvals                                                 | UL Listed and UL Channel verified<br>ETL verified to TIA / EIA Cat 6                    |  |
| 11 | Frequency tested up to                                    | 600 MHz minimum                                                                         |  |
| 12 | Packing                                                   | Box of 305 meters                                                                       |  |
| 13 | Impedance                                                 | 100 Ohms + / - 15 ohms                                                                  |  |
| 14 | Performance characteristics to be provided along with bid | Attenuation, Pair-to-pair and PS NEXT, ELFEXT and PSELFEXT, Return Loss, ACR and PS ACR |  |
| 15 | Delay Skew:                                               | 45ns Max                                                                                |  |
| 16 | Impedance:                                                | 100 ± 15 Ohms                                                                           |  |
| 17 | Current Rating:                                           | 1.5 A Max                                                                               |  |
| 18 | Conductor DC Resistance:                                  | 66.5Ω/km                                                                                |  |
| 19 | Voltage:                                                  | 150VAC                                                                                  |  |
| 20 | Propagation delay:                                        | 535ns/100m @250MHz                                                                      |  |
| 21 | Mutual Capacitance:                                       | 5.6nF/100m Nominal                                                                      |  |
| 22 | Insulation Resistance:                                    | 500 MΩ Minimum                                                                          |  |
| 23 | Dielectric Strength:                                      | 1000 V RMS                                                                              |  |
| 24 | Contact Resistance:                                       | 10 mΩ Max                                                                               |  |

### **Cat 6 outdoor armoured cable Box**

**Make : Molex / Panduit (Pan Net Only) / Commscope (Systimax Only) / TE (AMP Only)**

| S.No | Parameters/ Features | Required Specifications                                                                                    | Compliance |
|------|----------------------|------------------------------------------------------------------------------------------------------------|------------|
| 1    | Type                 | Unshielded twisted pair cabling system, TIA / EIA 568-C.2 Category 6 Cabling system                        |            |
| 2    | Network support      | Supports ultrahigh speed data networks such as Gigabit Ethernet (1000 Base-T and 1000 Base-TX) and beyond. |            |
| 3    | Conductor Size       | Solid 0.58 23 AWG Bare Annealed Copper                                                                     |            |
| 4    | Primary Insulation   | Solid Polyolefin                                                                                           |            |
| 5    | Nominal O.D          | 1.0 mm / Overall 10.3 mm Inner<br>0.6mm<br>Outer 1.8 mm                                                    |            |
| 6    | Sheath Type (Inner)  | LSOH                                                                                                       |            |
| 7    | Sheath Type (Outer)  | Heavy Duty UV Resistant PVC                                                                                |            |
| 8    | Commercial Standards | Category 6 ANSI/TIA/EIA 568C.2,<br>ISO/IEC 11801,<br>IEC 61156-5                                           |            |

**24 Port Jack Panel loaded**

**Make : Molex / Panduit (Pan Net Only) / Commscope (Systimax Only) / TE (AMP Only)**

|   | <b>Features and benefits</b> |                                                                                                  |  |
|---|------------------------------|--------------------------------------------------------------------------------------------------|--|
| 1 | Features                     | Available in 1U 24 Port                                                                          |  |
|   |                              | Each port features the patented spring-loaded shutter:                                           |  |
|   |                              | – prevents incomplete mating                                                                     |  |
|   |                              | – protects from dust and contaminants                                                            |  |
|   |                              | Patented IDC V-shaped contacts that flex not fatigue when terminated                             |  |
|   |                              | Features pointed IDC towers to speed termination and enhance cable retention                     |  |
|   |                              | Dual colour-coding allows for 568 A/B wiring configuration                                       |  |
|   |                              | Front and rear port labelling (port sequence 1–480) as well as panel identification label        |  |
|   |                              | 4 x 6 ganged jack configuration                                                                  |  |
|   |                              | Individually removable patch panel ports                                                         |  |
|   |                              | Removable cable management shelf(s) ensure bend radius compliance                                |  |
|   |                              | Available with either ANSI and metric hardware kit                                               |  |
|   |                              | Can be terminated using industry standard punch-down tools                                       |  |
|   |                              | RJ45 port which is RJ-11 compatible                                                              |  |
|   |                              | Molded category identification on each port face as well as optional port identification icons   |  |
| 2 | Rear Cable Manager           | Flat type metal with Perforated Rear Cable Manager to hold CAT6 UTP Cable with velcro cable ties |  |
| 3 | Dust Proof                   | RJ45 Jack should be supplied with Cap or Shutter to avoid Dust                                   |  |
| 4 | RJ45 I/O Compatibility       | Individual Compatible RJ45 Jack                                                                  |  |
|   |                              | Pointed IDC Tower on RJ45 Jack for easy termination                                              |  |
|   |                              | Half Plugged Patch Cord should be spitted out if not properly plugged in                         |  |

|   |                                   |                                                            |  |
|---|-----------------------------------|------------------------------------------------------------|--|
| 5 | <b>Mechanical Characteristics</b> |                                                            |  |
|   | Material:                         | CRS (cold rolled steel)                                    |  |
|   | Thickness:                        | .060" (1.52mm)                                             |  |
|   | Coating:                          | Grey / Option for Black                                    |  |
| 6 | <b>Jack Connector</b>             |                                                            |  |
|   | Plastic Housing:                  | Thermoplastic UL94V-0 rated or equivalent                  |  |
|   | Operating Life:                   | Minimum 750 insertion cycles                               |  |
|   | Contact Material:                 | Phosphor Bronze                                            |  |
|   | Contact Plating:                  | 50μ" Gold/100μ" Nickel                                     |  |
|   | Contact Force:                    | 100g minimum                                               |  |
|   | Plug Retention Force:             | 11 lbf minimum                                             |  |
| 7 | <b>IDC Connector</b>              |                                                            |  |
|   | Plastic Housing:                  | Thermoplastic UL94V-0 rated or equivalent                  |  |
|   | Operating Life:                   | Minimum 20 reterminations                                  |  |
|   | Contact Material:                 | Phosphor Bronze                                            |  |
|   | IDC Contact Plating:              | Solder Plate (60% tin/40% lead)                            |  |
|   | Wire Accommodation:               | 22-24 AWG solid                                            |  |
| 8 | <b>Electrical Characteristics</b> |                                                            |  |
|   | Interface Resistance:             | 20 milliohms                                               |  |
|   | Initial Contact Resistance:       | 2.5 milliohms                                              |  |
|   | Insulation Resistance:            | >100 Megaohms                                              |  |
| 9 | Standards                         | ETL Verified to ANSI/TIA-568-C.2, ISO/IEC 11801 Category 6 |  |

## **OTHER PASSIVE COMPONENTS**

**Make : Molex / Panduit (Pan Net Only) / Commscope (Systimax Only) / TE (AMP Only)**

| S.No | Item Description                      |
|------|---------------------------------------|
| 1    | Single mode 12Core OFC Cable          |
| 2    | Multimode 12 Core OFC Cable OM3       |
| 3    | Multimode 12 Core OFC Cable OM4       |
| 4    | 6 Port LIU with couplers              |
| 5    | 24 Port LIU with Couplers             |
| 6    | Single mode Fiber Patch Cord – 3 Mtrs |
| 7    | Multimode Fiber Patch card - 3 Mtrs   |
| 8    | CAT 6 Patch Card -1 Mtrs              |
| 9    | CAT6 RJ45 Jack                        |
| 10   | Pigtail                               |

| <b>CAMERA LOCATION</b>                         |                                     |                            |                             |                              |
|------------------------------------------------|-------------------------------------|----------------------------|-----------------------------|------------------------------|
| <b>Floors/Areas</b>                            | <b>Areas</b>                        | <b>25 Mtrs Dome Camera</b> | <b>30 Mtrs Bulet Camera</b> | <b>50 Mtrs Bullet Camera</b> |
| Ground Floor                                   | Reception Areas                     | 2                          | 1                           |                              |
|                                                | A -Wing                             |                            | 2                           |                              |
|                                                | B-Wing                              |                            |                             | 1                            |
|                                                | C-Wing                              |                            | 2                           |                              |
| First Floor                                    | Reception                           | 1                          | 1                           |                              |
|                                                | A -Wing                             |                            | 2                           |                              |
|                                                | B-Wing                              |                            |                             | 1                            |
|                                                | C-Wing                              |                            | 2                           |                              |
| Second Floor                                   | Reception                           | 1                          | 1                           |                              |
|                                                | A -Wing                             |                            | 2                           |                              |
|                                                | B-Wing                              |                            |                             | 1                            |
|                                                | C-Wing                              |                            | 2                           |                              |
| Third Floor                                    | Reception                           | 1                          | 1                           |                              |
|                                                | A -Wing                             |                            | 2                           |                              |
|                                                | B-Wing                              |                            |                             | 1                            |
|                                                | C-Wing                              |                            | 2                           |                              |
| Fourth Floor                                   | Reception                           | 1                          | 1                           |                              |
|                                                | A -Wing                             |                            | 2                           |                              |
| Ground Floor                                   | Main Entrance Door (Facing Outside) |                            | 1                           |                              |
| Entrance Outside Area (Right)                  | Facing Main Gate -1                 |                            |                             | 1                            |
| Right Side of the Main Building                | Parking Area - 1 (BIKE )            |                            |                             | 3                            |
| Entrance Outside Area (Left)                   | Tapal Receiving Section Pathway     |                            |                             | 3                            |
| Entrance Outside Area (Left)                   | Facing Main Gate -2                 |                            |                             | 1                            |
| Left Side of the Main Building                 | Lest side way of building           |                            |                             | 1                            |
| Left Side of the Main Building                 | Parking Area -2 ( Bike)             |                            |                             | 1                            |
| Rear Side of thr Main Building                 | Back Entrance                       |                            |                             | 1                            |
| Rear Side of the Main Building                 | Parking Area -3 (BIKE)              |                            |                             | 2                            |
| Rear Side of the Main Building (Behind Temple) | Car Parking Area                    |                            |                             | 2                            |
| Rear Side of Building                          | Canteen backside and Stores         |                            |                             | 1                            |
| <b>TOTAL</b>                                   |                                     | <b>6</b>                   | <b>24</b>                   | <b>20</b>                    |

## Chapter V – Price Schedule

### ACTIVE COMPONENTS

#### CAMERA / NVR / DISPLAY

| S.No | Item Description                 | Brand | Model | Part Number | Quantity | Rates in Rs. |
|------|----------------------------------|-------|-------|-------------|----------|--------------|
| 1    | 32 channel NVR                   |       |       |             | 2        |              |
| 2    | SURVEILANCE HARD DISK            |       |       |             | 16       |              |
| 3    | IP CAMERA (25m) Rugged Mini Dome |       |       |             | 6        |              |
| 4    | IP CAMERA (30m) Bullet           |       |       |             | 24       |              |
| 5    | IP CAMERA (50m) Bullet           |       |       |             | 20       |              |
| 6    | 43" LED Display                  |       |       |             | 1        |              |

### NETWORK COMPONENTS

| S.No | Item Description                    | Brand | Model | Part Number | Quantity                                               | Rates in Rs. |
|------|-------------------------------------|-------|-------|-------------|--------------------------------------------------------|--------------|
| 1    | 24 port Core Switch                 |       |       |             | 1                                                      |              |
| 2    | COPPER GIGABIT 10/100/1000T (100 M) |       |       |             | 3                                                      |              |
| 3    | SFP Fiber modules                   |       |       |             |                                                        |              |
|      | 3A FIBER GIGABIT LC SMF 10 KM       |       |       |             | <b>EITHER OF THE TWO 20NOS (SHOULD QUOTE FOR BOTH)</b> |              |
|      | 3B FIBER GIGABIT LC MMF 220-550 M   |       |       |             |                                                        |              |
| 4    | 16 Port PoE Switch                  |       |       |             | 5                                                      |              |
| 5    | 8 Port PoE Switch                   |       |       |             | 4                                                      |              |
| 6    | 8 Port Industrial PoE Switch        |       |       |             | 1                                                      |              |

### PASSIVE COMPONENTS

#### FIBER

| S.No | Item Description                | Brand | Part Number | Quantity                                                                      | Rate |
|------|---------------------------------|-------|-------------|-------------------------------------------------------------------------------|------|
| 1    | Single mode 12Core OFC Cable    |       |             | <b>EITHER OF THE THREE 1500mts approximately (SHOULD QUOTE FOR ALL THREE)</b> |      |
| 2    | Multimode 12 Core OFC Cable OM3 |       |             |                                                                               |      |
| 3    | Multimode 12 Core OFC Cable OM4 |       |             |                                                                               |      |



|   |                                       |  |  |                                                                      |                     |
|---|---------------------------------------|--|--|----------------------------------------------------------------------|---------------------|
| 4 | 6 Port LIU with couplers              |  |  | Quantity to be mentioned as per vendor design                        |                     |
| 5 | 24 Port LIU with Couplers             |  |  |                                                                      |                     |
| 6 | Single mode Fiber Patch Cord – 3 Mtrs |  |  | <b>EITHER OF THE TWO 25NOS approximately (SHOULD QUOTE FOR BOTH)</b> |                     |
| 7 | Multimode Fiber Patch card - 3 Mtrs   |  |  |                                                                      |                     |
| 8 | Pigtail                               |  |  |                                                                      | 50NOS approximately |

### **COPPER**

| S.No | Item Description              | Brand | Part Number | Quantity                                      | Rate |
|------|-------------------------------|-------|-------------|-----------------------------------------------|------|
| 1    | CAT 6 UTP Box                 |       |             | 13 boxes approximately                        |      |
| 2    | 24 Port Jack Panel loaded     |       |             | Quantity to be mentioned as per vendor design |      |
| 3    | CAT 6 Patch Card -1 Mtrs      |       |             | 50nos approximately                           |      |
| 4    | CAT6 RJ45 Jack                |       |             | 50nos approximately                           |      |
| 5    | CAT6 outdoor armoured UTP Box |       |             | 2 boxes approximately                         |      |

### **OTHERS**

| S.No | Item Description                  | Brand | Part Number | Quantity                                      | Rate |
|------|-----------------------------------|-------|-------------|-----------------------------------------------|------|
| 1    | 6U Rack with all Accessories      |       |             | Quantity to be mentioned as per vendor design |      |
| 2    | 9U Rack with all Accessories      |       |             |                                               |      |
| 3    | 12U Rack with all Accessories     |       |             |                                               |      |
| 4    | 15U Rack with all Accessories     |       |             |                                               |      |
| 5    | HDPE Pipe - 40mm with accessories |       |             |                                               |      |
| 6    | PVC Pipe with Accessories         |       |             |                                               |      |
| 7    | GI Pole (6 mts)                   |       |             |                                               |      |

### **LABOUR CHARGES**

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

**Note: Taxes may be quoted separately for each item**