SPECIFICATIONS FOR CCTV SYSTEM FOR ECLSS/HSFC, DEVANAHALLI

Technical Specifications - Annexure A

SI No	Specification	Parameter	Quantity
1	**Indoor Fixed Bullet Camera**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**32**
1.001	Image Sensor Type	CMOS	
1.002	Image Sensor Size	0.344 inch or better	
1.003	Camera Image Sensing capacity (Picture Mode)	2MP	
1.004	Resolution	2MP(1920×1080) or better	
1.005	Day/Night Capable	Yes	
1.006	IR illumination Range(mtr)	20 or better	
1.007	**CAMERA TYPE**		

1.008	Type of Camera Housing	BULLET CAMERA	
1.009	IP Camera	Yes	
1.010	PTZ Camera	No	
1.011	**OPTICS**		
1.012	Lens Type	Fixed Lens	
1.013	Focal Length(mm)	3.2 mm or better	
1.014	Iris Control	No	
1.015	Focus Mode	Fixed	
1.016	**VIDEO**		
1.017	Frame Rate (fps)	25	
1.018	Video Compression	H.264,H.265, MJPEG	

1.019	Video Streaming	Five individual Full HD compressed stream	
1.020	**PAN / TILT / ZOOM**		
1.021	Panning Range	NA	
1.022	Pan Speed (deg/sec)	NA	
1.023	Tilt Range below horizontal (deg)	NA	
1.024	Tilt Range above horizontal (deg)	NA	
1.025	Tilt Speed (deg/sec)	NA	
1.026	Optical Zoom	NA	
1.027	Digital Zoom	NA	
1.028	**AUDIO**		
1.029	Audio Support	NA	

1.030	Audio Compression	NA	
1.031	Audio Streaming	NA	
1.032	Number of Audio Input Channel	NA	
1.033	Number of Audio Output Channel	NA	
1.034	External Microphone Support	NA	
1.035	**ALARM**		
1.036	Alarm Support	Yes	
1.037	Number of Alarm Digital Input	1	
1.038	Number of Alarm Relay Output	1	
1.039	Pre/Post Alarm Buffer	Yes	
1.040	**SECURITY**		

1.041	Multi Level User ID/Password	Yes	
1.042	IP Address Filtering	Yes	
1.043	Encrypted Data Transmission	HTTPS (SSL/TSL)	
1.044	PERFORMANCE		
1.045	Minimum Illumination for Capturing Color Image	0.16 lux	
1.046	Electronic Shutter Speed(sec)	1/5 to 1/19000	
1.047	WDR (Wide Dynamic Range)	110 db	
1.048	SNR (Signal to Noise Ratio)	NA	
1.049	Auto Exposure	Auto Level Control,Electronic Level Control	
1.050	**FEATURES**		

1.051	White Balance (Indoor/Out door/Manual Selectable)	Yes	
1.052	Auto Gain Control (On/Off selectable)	Yes	
1.053	Back Light Compensation	Yes	
1.054	Remote Administration (Remote configuration and status using web based tool)	Yes	
1.055	Remote System Update Over Network	Yes	
1.056	PC Client (PC application client with a channel recording feature support)	Yes	
1.057	Web Client (Viewer through HTTP system configuration)	Yes	
1.058	On Screen Display in English	Yes	

1.059	ONVIF Support	Yes	
1.060	Presets	NA	
1.061	Group Touring	NA	
1.062	Privacy Zones	4	
1.063	**NETWORK AND INTERFACE**		
1.064	Supported Protocols	IPv4, IPv6 USGv6, HTTP, HTTPSb, HTTP/2, TLSb, QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, Bonjour, UPnP®, SNMP v1/v2c/v3 (MIB-II), DNS, NTP, NTS, RTSP, RTP, SRTP/RTSPS, TCP, UDP, IGMPv1/v2/v3, RTCP, DHCPv4/v6, SSH, LLDP, MQTT v3.1.1	
1.065	IP Support	Static,Dynamic	

1.066	Signal Processing	Digital Signal Process	
1.067	IPv6 ready	Yes	
1.068	Wireless	No	
1.069	Simultaneous Connections	8	
1.070	**STORAGE**	Preferred	
1.071	On Board SD Card Support	Yes	
1.072	SD Card Memory(GB)	512GB or better	
1.073	**HOUSING**		
1.074	Installation Type	Indoor	
1.075	Material of the Housing construction	Alluminium	
1.076	Protection	IP 66	

1.077	Vandal Resistant Housing	Yes	
1.078	If Yes, IK rating	IK08	
1.079	Mounting bracket	Wall / Ceiling Mounted	
1.080	Weight	To state	
1.081	Dimensions (mm x mm x mm)	To state	
1.082	**POWER SUPPLY**	If not PoE, suitable adapter to be provided	
1.083	Power Input	PoE / Thorugh AC adapter	
1.084	Power Consumption	To state	
1.085	Suitable Midspan Shall be Supplied to Make the Equipment Work on 230 V (+/- 10 %), 50 Hz	Yes	
1.086	**OPERATING CONDITIONS**		
1.087	Operating Temperature Range	-5ºC to +50ºC	

1.088	Relative Humidity Non Condensing (%)	90 or better	
1.089	**WARRANTY / SERVICES**		
1.090	**Warranty**	3 Years	
1.091	Time for Replacement of Defective Product During Warranty Period	72 hour	
1.092	Supply of Compatible drivers and software included	Yes	
1.093	**ENVIRONMENTAL / CERTIFICATION**		
1.094	Availability of facility & infrastructure for verification of all parameters, features, and capability with Seller	Yes	
1.095	Availability of facility to test signal to noise ratio of camera at 0-01 lux	Yes	

1.096	Conformity to Dry Heat test at 55 degree C for 16 hours as per IS :9000 latest	Yes	
1.097	Conformity to Damp heat at 40 degree C - 95% RH (cyclic test): two cycles of 16+8 hours as per IS: 9000 latest	Yes	
1.098	Conformity to Cold test at -10 / -20 degree C for 4 hours as per IS: 9000 latest, as applicable	Yes	
1.099	BIS Registration for safety general requirements as per IS 13252 (Part 1):latest	Preferred	
1.100	Availability of Type Test Report from Central Govt /NABL/ILAC accredited lab to prove conformity to specification	No	
1.101	Test Report Number and Date	NA	

1.102	Name and Address of Test Lab	NA	
1.103	Certification	IS or equivalent	
2	**Indoor Exp Proof PTZ Camera**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**4**
2.001	**IMAGE SENSOR**		
2.002	Image Sensor Type	CMOS	
2.003	Image Sensor Size	0.833 inch	
2.004	Camera Image Sensing capacity (Picture Mode)	2MP or better	
2.005	Resolution	2MP(1920×1080) or better	
2.006	Day/Night Capable	No	
2.007	IR illumination Range(mtr)	0	

2.008	**CAMERA TYPE**		
2.009	Type of Camera Housing	Explosion Proof BULLET CAMERA	
2.010	IP Camera	Yes	
2.011	PTZ Camera	Yes	
2.012	**OPTICS**		
2.013	Lens Type	Motorized Varifocal	
2.014	Focal Length(mm)	*6 to 10 mm Nominal or better	
2.015	Iris Control	Yes	
2.016	Focus Mode	Auto,Manual	
2.017	VIDEO		
2.018	Frame Rate (fps)	seletable upto 30 or better	

2.019	Video Compression	H.264,H.265, MJPEG	
2.020	*Video Streaming	*Five individual Full HD compressed stream	
2.021	**PAN / TILT / ZOOM**		
2.022	Panning Range	0-360	
2.023	*Pan Speed (deg/sec)	100 or better	
2.024	Tilt Range below horizontal (deg)	90 degree	
2.025	Tilt Range above horizontal (deg)	90 degree	
2.026	Tilt Speed (deg/sec)	100 or better	
2.027	Optical Zoom	20X or better	
2.028	Digital Zoom	6X or better	
2.029	**AUDIO**		

2.030	Audio Support	Yes	
2.031	Audio Compression	G.711,AAC,G.726	
2.032	Audio Streaming	Two-Way	
2.033	Number of Audio Input Channel	1	
2.034	Number of Audio Output Channel	1	
2.035	External Microphone Support	Yes	
2.036	**ALARM**		
2.037	Alarm Support	Yes	
2.038	Number of Alarm Digital Input	1	
2.039	Number of Alarm Relay Output	1	
2.040	Pre/Post Alarm Buffer	Yes	

2.041	**SECURITY**		
2.042	Multi Level User ID/Password	Yes	
2.043	IP Address Filtering	Yes	
2.044	Encrypted Data Transmission	HTTPS (SSL/TSL)	
2.045	PERFORMANCE		
2.046	Minimum Illumination for Capturing Color Image	0.1 lux	
2.047	Electronic Shutter Speed(sec)	2 to 1/37000	
2.048	WDR (Wide Dynamic Range)	120 db	
2.049	Auto Exposure	Auto Level Control,Electronic Level Control	
2.050	**FEATURES**		

2.051	White Balance (Indoor/Out door/Manual Selectable)	Yes	
2.052	Auto Gain Control (On/Off selectable)	Yes	
2.053	Back Light Compensation	Yes	
2.054	Remote Administration (Remote configuration and status using web based tool)	Yes	
2.055	Remote System Update Over Network	Yes	
2.056	PC Client (PC application client with a channel recording feature support)	Yes	
2.057	Web Client (Viewer through HTTP system configuration)	Yes	
2.058	On Screen Display in English	Yes	

2.059	ONVIF Support	Yes
2.060	Presets	NA
2.061	Group Touring	NA
2.062	Privacy Zones	4
2.063	**NETWORK AND INTERFACE**	Shielded RJ45 10BASE-T/100BASE-TX/1000BASE-T
2.064	Supported Protocols	IPv4, IPv6 USGv6, ICMPv4/ICMPv6, HTTP, HTTPSb, HTTP/2, TLSb, QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, mDNS (Bonjour), UPnP®, SNMP v1/v2c/v3 (MIB-II), DNS/DNSv6, DDNS, NTP, NTS, RTSP, RTP, SRTP/RTSPS, TCP, UDP, IGMPv1/v2/v3, RTCP, ICMP, DHCPv4/v6, ARP, SSH, LLDP, CDP, MQTT v3.1.1, Syslog, Link-Local address (ZeroConf)

2.065	IP Support	Static,Dynamic	
2.066	Signal Processing	Digital Signal Process	
2.067	IPv6 ready	Yes	
2.068	Wireless	No	
2.069	Simultaneous Connections	8	
2.070	**STORAGE**		
2.071	On Board SD Card Support	Yes	
2.072	SD Card Memory(GB) Supported Upto	512GB or better	
2.073	**HOUSING**		
2.074	Installation Type	Indoor	
2.075	Material of the Housing construction	Stainless Steel / Aluminium	

2.076	Protection	IP 66	
2.077	Vandal Resistant Housing	Yes	
2.078	If Yes, IK rating	IK10	
2.079	Mounting bracket	Wall Mounted	
2.080	Weight	1500 gram	
2.081	Dimensions (mm x mm x mm)	Ø132 x 132 x 280 mm	
2.082	**POWER SUPPLY**		
2.083	Power Input	PoE / Thorugh AC adapter	
2.084	Power Consumption	To state	
2.085	Suitable Adapter Shall be Supplied to Make the Equipment Work on 230 V (+/- 10 %), 50 Hz	Yes (From same Make as Camera)	

2.086	**WARRANTY / SERVICES**		
2.087	**Warranty**	3 Years	
2.088	Time for Replacement of Defective Product During Warranty Period	72 hour	
2.089	Supply of Compatible drivers and software included	Yes	
2.090	Time for Replacement of Defective Product During Warranty Period	72 hour	
2.091	Supply of Compatible drivers and software included	Yes	
2.092	**ENVIRONMENTAL / CERTIFICATION**		

2.093	BIS Registration for safety general requirements as per IS 13252 (Part 1):latest	Yes	
2.094	Certification	RoHS,CE,FCC, Atex,MTBF >100,000 h (Certificates to be provided from OEM)	
2.095	Conformity to Damp heat at 40 degree C - 95% RH (cyclic test): two cycles of 16+8 hours as per IS: 9000 latest	Yes	
2.096	Conformity to Cold test at -10 / -20 degree C for 4 hours as per IS: 9000 latest, as applicable	Yes	
2.097	BIS Registration for safety general requirements as per IS 13252 (Part 1):latest	Yes	

2.098	Availability of Type Test Report from Central Govt /NABL/ILAC accredited lab to prove conformity to specification	No	
2.099	Test Report Number and Date	NA	
2.100	Name and Address of Test Lab	NA	
2.101	Certification	IS or equivalent	
3.000	**Indoor Fixed Exp Proof Camera**		**4**
3.001	**IMAGE SENSOR**		
3.002	Image Sensor Type	CMOS	
3.003	Image Sensor Size	0.833 inch or better	
3.004	Camera Image Sensing capacity (Picture Mode)	2MP or better	

3.005	Resolution	2MP(1920×1080) or better	
3.006	Day/Night Capable	No	
3.007	IR illumination Range(mtr)	0	
3.008	**CAMERA TYPE**		
3.009	Type of Camera Housing	Explosion Proof BULLET CAMERA	
3.010	IP Camera	Yes	
3.011	PTZ Camera	No	
3.012	**OPTICS**		
3.013	Lens Type	Motorized Varifocal	
3.014	Focal Length(mm)	*6 to 10 mm Nominal or better	
3.015	Iris Control	Yes	

3.016	Focus Mode	Auto,Manual	
3.017	**VIDEO**		
3.018	Frame Rate (fps)	Selectable upto 30 or better	
3.019	Video Compression	H.264,H.265, MJPEG	
3.020	*Video Streaming	*Five individual Full HD compressed stream	
3.021	**PAN / TILT / ZOOM**		
3.022	Panning Range	NA	
3.023	Pan Speed (deg/sec)	NA	
3.024	Tilt Range below horizontal (deg)	NA	
3.025	Tilt Range above horizontal (deg)	NA	
3.026	Tilt Speed (deg/sec)	NA	

3.027	Optical Zoom	NA	
3.028	Digital Zoom	NA	
3.029	**AUDIO**		
3.030	Audio Support	Yes	
3.031	Audio Compression	G.711,AAC,G.726	
3.032	*Audio Streaming	Two-Way	
3.033	Number of Audio Input Channel	1	
3.034	Number of Audio Output Channel	1	
3.035	External Microphone Support	Yes	
3.036	**ALARM**		
3.037	Alarm Support	Yes	

3.038	Number of Alarm Digital Input	1	
3.039	Number of Alarm Relay Output	1	
3.040	Pre/Post Alarm Buffer	Yes	
3.041	**SECURITY**		
3.042	Multi Level User ID/Password	Yes	
3.043	IP Address Filtering	Yes	
3.044	Encrypted Data Transmission	HTTPS (SSL/TSL)	
3.045	**PERFORMANCE**		
3.046	Minimum Illumination for Capturing Color Image	0.1 lux	
3.047	Electronic Shutter Speed(sec)	2 to 1/37000	
3.048	WDR (Wide Dynamic Range)	120 db	

3.049	Auto Exposure	Auto Level Control,Electronic Level Control	
3.050	**FEATURES**		
3.051	White Balance (Indoor/Out door/Manual Selectable)	Yes	
3.052	Auto Gain Control (On/Off selectable)	Yes	
3.053	Back Light Compensation	Yes	
3.054	Remote Administration (Remote configuration and status using web based tool)	Yes	
3.055	Remote System Update Over Network	Yes	
3.056	PC Client (PC application client with a channel recording feature support)	Yes	

3.057	Web Client (Viewer through HTTP system configuration)	Yes	
3.058	On Screen Display in English	Yes	
3.059	ONVIF Support	Yes	
3.060	Presets	NA	
3.061	Group Touring	NA	
3.062	Privacy Zones	4	
3.063	**NETWORK AND INTERFACE**	Shielded RJ45 10BASE-T/100BASE-TX/1000BASE-T	

3.064	Supported Protocols	IPv4, IPv6 USGv6, ICMPv4/ICMPv6, HTTP, HTTPSb, HTTP/2, TLSb, QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, mDNS (Bonjour), UPnP®, SNMP v1/v2c/v3 (MIB-II), DNS/DNSv6, DDNS, NTP, NTS, RTSP, RTP, SRTP/RTSPS, TCP, UDP, IGMPv1/v2/v3, RTCP, ICMP, DHCPv4/v6, ARP, SSH, LLDP, CDP, MQTT v3.1.1, Syslog, Link-Local address (ZeroConf)	
3.065	IP Support	Static,Dynamic	
3.066	Signal Processing	Digital Signal Process	
3.067	IPv6 ready	Yes	
3.068	Wireless	No	
3.069	Simultaneous Connections	8	

3.070	**STORAGE**		
3.071	On Board SD Card Support	Yes	
3.072	SD Card Memory(GB) Supported Upto	512GB or better	
3.073	**HOUSING**		
3.074	Installation Type	Indoor	
3.075	Material of the Housing construction	Stainless Steel / Aluminium	
3.076	Protection	IP 66	
3.077	Vandal Resistant Housing	Yes	
3.078	If Yes, IK rating	IK10	
3.079	Mounting bracket	Wall Mounted	
3.080	Weight	To state	

3.081	Dimensions (mm x mm x mm)	To state	
3.082	**POWER SUPPLY**		
3.083	Power Input	PoE / Thorugh AC adapter	
3.084	Power Consumption	To state	
3.085	Suitable Adapter Shall be Supplied to Make the Equipment Work on 230 V (+/- 10 %), 50 Hz	Yes (From same Make as Camera)	
3.086	**WARRANTY / SERVICES**		
3.087	**Warranty**	3 Years	
3.088	Time for Replacement of Defective Product During Warranty Period	72 hour	

3.089	Supply of Compatible drivers and software included	Yes	
3.090	Time for Replacement of Defective Product During Warranty Period	72 hour	
3.091	Supply of Compatible drivers and software included	Yes	
3.092	**ENVIRONMENTAL / CERTIFICATION**		
3.093	BIS Registration for safety general requirements as per IS 13252 (Part 1):latest	Yes	
3.094	Certification	RoHS,CE,FCC, Atex,MTBF >100,000 h (Certificates to be provided from OEM)	

3.095	Conformity to Damp heat at 40 degree C - 95% RH (cyclic test): two cycles of 16+8 hours as per IS: 9000 latest	Yes	
3.096	Conformity to Cold test at -10 / -20 degree C for 4 hours as per IS: 9000 latest, as applicable	Yes	
3.097	BIS Registration for safety general requirements as per IS 13252 (Part 1):latest	Yes	
3.098	Availability of Type Test Report from Central Govt /NABL/ILAC accredited lab to prove conformity to specification	No	
3.099	Test Report Number and Date	NA	

3.100	Name and Address of Test Lab	NA	
3.101	Certification	IS or equivalent	
4	**Outdoor Fixed Bullet Camera**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**55**
4.001	**IMAGE SENSOR**		
4.002	Image Sensor Type	CMOS	
4.003	Image Sensor Size	0.357 inch	
4.004	Camera Image Sensing capacity (Picture Mode)	2MP	
4.005	Resolution	2MP(1920×1080)	
4.006	Day/Night Capable	Yes	
4.007	IR illumination Range(mtr)	40 or better	
4.008	CAMERA TYPE		
4.009	Type of Camera Housing	BULLET CAMERA	
4.010	IP Camera	Yes	

4.011	PTZ Camera	No	
4.012	**OPTICS**		
4.013	Lens Type	Motorized Varifocal	
4.014	Focal Length(mm)	~ 3 to 9mm Nominal	
4.015	Iris Control	Yes	
4.016	Focus Mode	Auto,Manual	
4.017	**VIDEO**		
4.018	Frame Rate (fps)	50	
4.019	Video Compression	H.264,H.265, MJPEG	
4.020	Video Streaming	Five individual Full HD compressed stream	
4.021	**PAN / TILT / ZOOM**		
4.022	Panning Range	NA	
4.023	Pan Speed (deg/sec)	NA	
4.024	Tilt Range below horizontal (deg)	NA	
4.025	Tilt Range above horizontal (deg)	NA	
4.026	Tilt Speed (deg/sec)	NA	
4.027	Optical Zoom	NA	
4.028	Digital Zoom	NA	
4.029	**AUDIO**		
4.030	Audio Support	Yes	
4.031	Audio Compression	G.711,AAC,G.726,G.722	

4.032	Audio Streaming	One-Way	
4.033	Number of Audio Input Channel	1	
4.034	Number of Audio Output Channel	1	
4.035	External Microphone Support	Yes	
4.036	**ALARM**		
4.037	Alarm Support	Yes	
4.038	Number of Alarm Digital Input	1	
4.039	Number of Alarm Relay Output	1	
4.040	Pre/Post Alarm Buffer	Yes	
4.041	**SECURITY**		
4.042	Multi Level User ID/Password	Yes	
4.043	IP Address Filtering	Yes	
4.044	Encrypted Data Transmission	HTTPS (SSL/TSL)	
4.045	**PERFORMANCE**		
4.046	Minimum Illumination for Capturing Color Image	0.002 lux	

4.047	Electronic Shutter Speed(sec)	2 to 1/71,500	
4.048	WDR (Wide Dynamic Range)	120 db	
4.049	SNR (Signal to Noise Ratio)	>55	
4.050	Auto Exposure	Auto Level Control,Electronic Level Control	
4.051	**FEATURES**		
4.052	White Balance (Indoor/Out door/Manual Selectable)	Yes	
4.053	Auto Gain Control (On/Off selectable)	Yes	
4.054	Back Light Compensation	Yes	
4.055	Remote Administration (Remote configuration and status using web based tool)	Yes	
4.056	Remote System Update Over Network	Yes	
4.057	PC Client (PC application client with a channel recording feature support)	Yes	

4.058	Web Client (Viewer through HTTP system configuration)	Yes	
4.059	On Screen Display in English	Yes	
4.060	ONVIF Support	Yes	
4.061	Presets	NA	
4.062	Group Touring	NA	
4.063	Privacy Zones	4	
4.064	NETWORK AND INTERFACE		
4.065	Supported Protocols	IPv4, IPv6 USGv6, ICMPv4/ICMPv6, HTTP, HTTPSb, HTTP/2, TLSb, QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, mDNS (Bonjour), UPnP®, SNMP v1/v2c/v3 (MIB-II), DNS/DNSv6, DDNS, NTP, NTS, RTSP, RTP, SRTP/RTSPS, TCP, UDP, IGMPv1/v2/v3, RTCP, ICMP, DHCPv4/v6, ARP, SSH, LLDP, CDP, MQTT v3.1.1, Syslog, Link-Local address (ZeroConf)	
4.066	IP Support	Static,Dynamic	
4.067	Signal Processing	Digital Signal Process	

4.068	IPv6 ready	Yes	
4.069	Wireless	No	
4.070	Simultaneous Connections	8	
4.071	**STORAGE**		
4.072	On Board SD Card Support	Yes	
4.073	SD Card Memory(GB)	512GB or better	
4.074	**HOUSING**		
4.075	Installation Type	Outdoor	
4.076	Material of the Housing construction	Alluminium	
4.077	Protection	IP 66	
4.078	Vandal Resistant Housing	Yes	
4.079	If Yes, IK rating	To state	
4.080	Mounting bracket	Wall Mounted	
4.081	Weight	To state	
4.082	Dimensions (mm x mm x mm)	To state	
4.083	**POWER SUPPLY**		
4.084	Power Input	PoE	
4.085	Power Consumption	15 Watt	

4.086	Suitable Adapter Shall be Supplied to Make the Equipment Work on 230 V (+/- 10 %), 50 Hz	Yes	
4.087	**OPERATING CONDITIONS**		
4.088	Operating Temperature Range	- 30 to +50 deg C	
4.089	Relative Humidity Non Condensing (%)	90	
4.090	**WARRANTY / SERVICES**		
4.091	Warranty	3 year	
4.092	Time for Replacement of Defective Product During Warranty Period	72 hour	
4.093	Supply of Compatible drivers and software included	Yes	
4.094	**ENVIRONMENTAL / CERTIFICATION**		

4.095	Availability of facility & infrastructure for verification of all parameters, features, and capability with Seller	Yes	
4.096	Availability of facility to test signal to noise ratio of camera at 0-01 lux	Yes	
4.097	Conformity to Dry Heat test at 55 degree C for 16 hours as per IS :9000 latest	Yes	
4.098	Conformity to Damp heat at 40 degree C - 95% RH (cyclic test): two cycles of 16+8 hours as per IS: 9000 latest	Yes	
4.099	Conformity to Cold test at -10 / -20 degree C for 4 hours as per IS: 9000 latest, as applicable	Yes	

4.100	BIS Registration for safety general requirements as per IS 13252 (Part 1):latest	Yes	
4.101	Availability of Type Test Report from Central Govt /NABL/ILAC accredited lab to prove conformity to specification	No	
4.102	Test Report Number and Date	NA	
4.103	Name and Address of Test Lab	NA	
4.104	Certification	IS or equivalent	
5	**Midspan for Outdoor Fixed Camera populated with Single Mode SFP Module**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**16**
5.01	Data rate	1000 Mbps or better	

5.01	Power	AC input voltage: 100 to 240 V AC AC frequency: 50–60 Hz Output Supported for upto 55 V DC (max 60 W)	
5.03	Connectors	Shielded RJ45, EIA 568A and 568B SFP slot Power connector : Vendor shall quote for Indian 3 Pin Power cables compatible with Midspan to support 220VAC with	
5.04	Mounting	DIN rail Mount Clips to be provided	
5.05	Operating conditions	0 °C to 45 °C or better, Humidity max 90% RH (non-condensing)	
5.06	Certifications and Approvals	IEC/EN/UL or better	
5.07	Switching capacity	1.25 Gbps or better	
5.08	Transceiver type	Single-mode Minimum transfer distance 10 km Hot pluggability Wavelength 1310 nm 1.0625 Gbps fibre channel FC-PI 100–SM–LC-L compliant	

5.09	Compatibility	The midspan & SFP Module shoulde be from the same OEM as the camera manufacturer to ensure compatibility	
6	**L3 Core Switch 24-port 10/100/1000T and 100/1000 SFP stackable switch with 4 SFP+ ports and dual hotswap PSU bays with Rack**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**2**
6.01	Switch Architecture	Shall equipped with 24x 1G SFP slots and 24 x 1G Base T Slots additionally 4 1G/10G SFP/SFP+ Slots uplink. Fibre slots should be backward compatible i.e., 100FX/1000FX. 4 10G SFP+ ports should also support 1G SFP based on network requirement.	
6.02	Switch Architecture	Shall future upgradable with 2x40G SFP+ slots	
6.03	Switch Architecture	Internal Hot swappable Redundant Power Supply Equipped	

6.04	Switching Capacity	Should support switching fabric of 288Gbps or more	
6.05	Forwarding rate	Should support min forwarding rate of 214 Mpps or higher	
6.06	Hardware redundancy & Resiliency	Two or more Switches in stack should be capable to operate as one logical L3 Virtual switch with synchronisation of L3 & L2 protocols for higher availability .Switch should be supplied with required stacking cables with stacking bandwidth of min 160Gbps per switch	
6.07	Hardware redundancy & Resiliency	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	
6.08	Layer 2 Features	Support 802.1D, 802.1S, 802.1w, Rate limiting	
6.09	Layer 2 Features	Support 802.1X Security standards	
6.10	Layer 2 Features	Support 802.1Q VLAN encapsulation, IGMP v1,v2 and v3 snooping, MLD snooping	

6.11	Layer 2 Features	Support up to 4096 VLANs	
6.12	Layer 2 Features	Support IGMP Snooping and IGMP Querying	
6.13	Layer 2 Features	Should support STP, RSTP, MSTP, ITU-T G.8032	
6.14	Layer 3 Features	Should support Static routing,	
6.15	Layer 3 Features	OSPFv2 for IPv4 & OSPFv3 for IPv6	
6.16	Layer 3 Features	BGP for IPv4 & IPv6	
6.17	Layer 3 Features	PIM for IPv4 SM, DM and SSM, PIMv6-SM	
6.18	VLAN	Should Support 802.1Q Tagged VLAN, port based VLANs and Private VLAN	
6.19	VLAN	Should Support IEEE 802.1v VLAN classification by protocol and port	
6.20	VLAN	Should Support IEEE 802.1ad Provider bridges (VLAN stacking, Q-in-Q)	
6.21	VLAN	Should Support dynamic VLAN Registration or equivalent	
6.22	VLAN	Should Support VLAN trunking or equivalent,	

6.23	Management	Switch needs to have a console port for management via a console terminal or PC	
6.24	Management	Must have support SNMP V1, V2 and V3	
6.25	Management	Should support 4 groups of RMON	
6.26	Management	Should have accessibility using Telnet, SSH, Console access, easier software upgrade through network using TFTP etc. Configuration management through CLI, GUI based software utility or using web interface	
6.27	Management	Support SNMPv6, Telnetv6 and SSHv6, DHCPv6 relay, DHCPv6 client, NTPv6 client and server,	
6.28	Management	Support NTP/SNTP,SDN openflow v1.3	
6.29	Security	Should support ACLs, VLAN ACL's	
6.30	Security	Support DHCP snooping, IP source guard and Dynamic ARP Inspection (DAI), Support MAC address filtering and MAC address lock-down,	

6.31	Security	Support Tri-authentication: MAC-based, web-based and IEEE 802.1x	
6.32	Security	Support DHCPv4 client	
6.33	Security	Support sflow/netflow, Port mirroring	
6.34	Interoperability	For ease of integration all switches should be of same OEM	
6.35	Environment	Operating Temperature- 0 to 50 C	
6.36	Interoperability	For ease of operations, all the switches and modules should be from OEM	
7	**Distribution Switch 24-port 10/100/1000T PoE+ Edge Switch with 4 SFP ports and fixed power supply with Rack Mount Kit**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**4**
7.01	Ports	24 x 10/100/1000 Base-T and additional 4 x 1G Base-X ports. Uplink ports should backward compatible with 100 Mbps. Should support minimum 370 watts poe budget that supports 802.3at	

7.02	Layer 2 Features	Should support STP, RSTP, MSTP, IGMP v1/v2/v3 snooping, STP root guard, Voice VLAN, loop protection, MLD snooping (MLDv1 and v2), IEEE 802.3ac, IEEE 802.1v, 16k MAC Table or more	
7.03	Resilence	Should support IEEE 802.17/equivalent for sub 50ms ring protection	
7.04	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+	
7.05	Management	CLI, GUI, USB / SD Card interface for taking backup of software release files configurations, Digital optical monitoring.	

7.06	Features	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	
7.07	Certifications and Approvals	Should support UL, cUL Should Support and operating Temp of Minum 50 deg C	
7.08	Interoperability	For ease of integration all switches should be of same OEM	
8	**8-port 100/1000x SFP fixed power supply with Rack Mount Kit**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**3**
8.01	Ports	8 x 100/1000x SFP PORTS Uplink ports should backward compatible with 100 Mbps.	

8.02	Layer 2 Features	Should support STP, RSTP, MSTP, IGMP v1/v2/v3 snooping, 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	
8.03	Resilence	Should support IEEE 802.17/equivalent for sub 50ms ring protection	
8.04	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,	
8.05	Management	CLI, GUI, USB / SD Card interface for taking backup of software release files configurations, Digital optical monitoring,	

8.06	Features	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	
8.07	Certifications and Approvals	Should support UL, cUL Should Support and operating Temp of Minum 50 deg C	
8.08	Interoperability	For ease of integration all switches should be of same OEM	
9	**SM 1G SFP Module**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**40**
9.01	Fiber Type	SMF	
9.02	connector type	LC	
9.03	maximum distance	10 km	
9.04	wavelength tx/rx (nm)	1310	
9.05	transmit (dbm) min / max	-9 to -3	
9.06	receive sensitivity (dbm)	-20	
9.07	power budget (db)	11	
9.08	overload (dbm)	-3	
9.09	operating temp	0°C to 50°C	

9.10	operating humidity	0 to 85% non-condensing	
9.11	compatibility	SFP Module should be from the same switch Manufacturer to ensure compatibility	
10	**Management Server**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**1**
10.01	Chassis	2U Rack Mountable	
10.02	Processor	1 x Xeon Sliver 4310 12C 2.10 Ghz or better	
10.03	L3 Cache Memory	18 MB cache or better	
10.04	Memory	64GB (4*16GB) Fully buffered DDR4 @3200 R ECC RAM or better	
10.05	Memory Scalability	32 DIMM Slots (16 DIMMS per CPU, 8 Channels with 2 DIMMS per Channel) Scalibility upto 3TB or better	
10.06	Drive Bays	8 Hot Plug 2.5" Hard Disk Bays or better	

10.07	Hard Disk Drives	6x600GB 12G SAS 15k RPM Hot Plug (2.5") Enterprise Hard Disk 2x960 GB Hot Plug SSD SATA/SAS for OS or better	
10.08	SAN Interface	Dual Port 16 Gbps or better SAN FC/iSCSI host bus adapter or better	
10.09	Drive Contoller	Integrated or add-on SAS Controller or better	
10.10	RAID Contoller	Integrated or add-on RAID Controller SAS/SATA 12GBit/s, 8 Ports RAID LEVEL 0,1,10,5,50,6,60 or better	
10.11	Optical Drive	DVD-RW Combo with dual layer write capability or better	
10.12	Graphics	Integrated Graphics Controller or better	
10.13	Network	4x1GB Ethernet Adapter in addition to integrated NIC changed to 2 X 1GB + 2 X 10GB	
10.14	Bus Slots	5 PCIExpress slots PCIe 4.0 x8 - 2 Nos. PCIe 3.0 x16- 3 Nos.	
10.15	I/O ports and connectors	4 USB Ports	
10.16	OS certification	windows server 2022 certificate from Microsoft Website to be provided	

10.17	Operating System	Windows Server 2022 64-bit Standard Version (with latest service pack) with license or latest version	
10.18	Antivirus software	Pre - installed with 3-year license, software	
10.19	Other Accessories	Redundant power supply with cooling fans, Indian Standard power cord system recovery, Drivers & Utilities DVDs, Networking Cables	
10.20	Defective Media Retention	Keep your hard drive policy	
11	**Recording Server**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**2**
11.01	Chassis	2U Rack Mountable	
11.02	Processor	2 x Xeon Sliver 4310 12C 2.10 Ghz or better	
11.03	L3 Cache Memory	18 MB cache or better	
11.04	Memory	128GB (8*16GB) Fully buffered DDR4 @3200 R ECC RAM or better	

11.05	Memory Scalability	32 DIMM Slots (16 DIMMS per CPU, 8 Channels with 2 DIMMS per Channel) Scalibility upto 3TB or better	
11.06	Drive Bays	8 Hot Plug 2.5" Hard Disk Bays or better	
11.07	Hard Disk Drives	6x600GB 12G SAS 15k RPM Hot Plug (2.5'') Enterprise Hard Disk 2x960 GB Hot Plug SSD SATA/SAS for OS or better	
11.08	SAN Interface	Dual Port 16 Gbps or better SAN FC/iSCSI host bus adapter or better	
11.09	Drive Contoller	Integrated or add-on SAS Controller or better	
11.10	RAID Contoller	Integrated or add-on RAID Controller SAS/SATA 12GBit/s, 8 Ports RAID LEVEL 0,1,10,5,50,6,60 or better	
11.11	Optical Drive	DVD-RW Combo with dual layer write capability or better	
11.12	Graphics	Integrated Graphics Controller or better	

11.13	Network	4x1GB Ethernet Adapter in addition to integrated NIC changed to 2 X 1GB + 2 X 10GB	
11.14	Bus Slots	5 PCIExpress slots PCIe 4.0 x8 - 2 Nos. PCIe 3.0 x16- 3 Nos.	
11.15	I/O ports and connectors	4 USB Ports	
11.16	OS certification	windows server 2022 certificate from Microsoft Website to be provided	
11.17	Operating System	Windows Server 2022 64-bit Standard Version (with latest service pack) with license or latest version	
11.18	Antivirus software	Pre - installed with 3-year license, software	
11.19	Other Accessories	Redundant power supply with cooling fans, Indian Standard power cord system recovery, Drivers & Utilities DVDs, Networking Cables	
11.20	Defective Media Retention	Keep your hard drive policy	
12	**100TB Usable Storage**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**1**

12.01	Controller	Dual active controller with automated I/O path failover or better	
12.02	Front end Ports	Should have minimum of 2 * 25 Gbps iSCSI and 2 * 16 Gbps FC Ports per Controllers.	
12.03	Back end Ports	The stoarge system should have minimum 2x12Gbps backend ports per controller.	
12.04	Management Software	Must include Storage Manager software, to centrally manage all Storage subsystems, Multi-path (Load Balancing & Failover), LUN masking and should Support RAID migration on to the vacant space available	
12.05	O/S Support	Apple Mac OS,CentOS Linux,IBM AIX,Microsoft Windows Server Novell SUSE Linux Enterprise Server,Oracle Enterprise Linux Oracle Solaris,Red Hat Enterprise Linux ,Ubuntu Linux,VMware ESX	
12.06	Scalability	It Should be scalable upto 180 no of HDD in same storage or expendable upto 1 PB usable capacity.	

12.07	Capacity	Offered SAN Array shall be configured for 100TB usable on 7.2K RPM dual ported NL-SAS HDD on RAID 6 . Hot spare drive will be 1 spares extra per 30 drives if any	
12.08	Raid Controllers	Dual, both Active, minimum 64 GB cache across the two Controllers (32 GB per Controller). Cache should be controller based not drive based.	
12.09	Protocol Support	FC,iSCSI	
12.10	Cache Safety	Cache should be mirrored and battery-backed-up /disk-destaged,to provide protection of data for 72 hours or more.	
12.11	Drive Interface	The stoarge should have 12Gbps Drive interface or higher	
12.12	Supported Drives, Mixed Drives	Should support SSD, SAS, NL-SAS, 12 GBPs Drives in same enclousure.	
12.13	RAID levels	The stoarge should support 0, 1, 5, 6 and 10 RAID levels.	
12.14	Fans and power Supplies	Redundant, hot-swappable power supplies and fans	

12.15	Rack Support	Suitable for industry-standard Racks and PDUs	
12.16	Data Services	Should include data Snapshot, Thin provisioning, Volume cloning or equivalent features for the offered capacity of the storage array. The proposed system should also include storage based replication software	
12.17	Alerts	Automated alerts for Improving service response times.	
12.18	Others	All required cable and connectors to be supplied	
12.19	Certification	OEM should be in leader of Gartner Magic Quadrant from last 3 years.	
12.20	Defective Media Retention	Keep your hard drive policy	
13	**Digital Video Management software for Supply of Video Management Software 1 Base License + 100 Device Licenses with 3 Years Support**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**1**

13.001	**General**		
13.002		The VMS shall be a fully distributed solution, designed for limitless multi-site and multiple server installations requiring 24/7 surveillance with support for devices from different vendors. The VMS shall offer centralized management of all devices, servers and users and must empower a flexible rule-based system driven by schedules and events.	
13.003		VMS shall already support IP cameras from at least fifty (50) major vendors and a minimum of 10000 Certified Devices Bidders shall clearly list in their proposal the brands and models already integrated into VMS.	
13.004		VMS shall support IP Network Horn Speakers, Management of Cameras Speakers should be possible from within the VMS without use of Web Browser	

13.005		To ensure openness, VMS and cameras may or may not be from the same manufacturer.	
13.006		VMS shall manage Password of cameras directly from software management tool.	
13.007		VMS shall support installation and ability to run on virtualized windows servers	
13.008		VMS shall have API based integration with the major camera vendors in order to support features such as, up to 3 Multi- streams, SD Card storage sync, Camera based supported Edge Analytics, Camera I/O support, Camera Audio support	
13.009		VMS manufacturer shall provide their SDK (or any other integration means) libraries and documentation) to ensure a seamless integration with any other system	
13.010		VMS shall be open to any standard storage technologies integration.	

13.011		VMS shall have the possibility to integrate external Video Analytics systems.	
13.012		The VMS system shall be a scalable client – server architecture built using well known operating systems	
13.013		The VMS system shall enable recording to be done at the aggregation sites and shall allow the local Control center to import selected video's on demand.	
13.014		Aggregation site types shall be categorized according to function and size as per the table below.	
13.015		To facilitate the VMS system architecture, the BIDDER shall ensure that sufficient capacity is designed into the data communications & telecommunications infrastructure to deliver the required functionality, along with the ability to allocate and reserve resources (including bandwidth).	

13.016		The VMS system shall be compatible to single and multiple processor servers. The server processor & hardware shall be optimized in all cases.	
13.017		The VMS system shall cluster the processing & memory load across several machines. The failure of any one server in the solution shall not cause a failure in the entire system.	
13.018		The VMS system device drivers shall be stored separately to the central core application to ensure any instability in 3rd party SDKs do not affect the core application.	
13.019		The VMS management server shall be able to intelligently scan an IP network for new devices (cameras or servers) along with automatic model detection.	

13.020		Network infrastructure and installation are the responsibility of the Bidder. Network components both active and required for the successful implementation of the video surveillance detailed in this tender shall be provided by the Bidder. The network infrastructure shall meet the streaming requirement of the project without any bottlenecks. The network infrastructure shall support UDP multicast, UDP unicast and TCP transmission	
13.021		The VMS system shall provide an integrated secure, scalable and easily accessible software-based solution for the management of the existing & future physical security infrastructure	
13.022		The VMS system shall provide a powerful and efficient management interface for all the security systems across all monitored sites.	

13.023		The VMS shall contain recording servers used for recording video feeds and for communicating with cameras and other devices. The recording servers shall process the recordings and playback the video streams	
13.024		The management server shall allow access to a system manager from where the administrator can configure and manage all servers, cameras and users.	
13.025		The system shall allow the management server to be installed on multiple servers within a cluster of servers ensuring that another server in the cluster automatically takes over in case the first server fails.	
13.026		The VMS shall support installation and ability to run on virtualized Windows® servers.	

13.027		The VMS shall allow an unlimited number of cameras to be connected to each recording server and an unlimited number of recording servers to be connected to each management server across multiple sites, if required
13.028		The VMS shall support high availability of recording servers. A failover option shall provide standby support for recording servers with automatic synchronization to ensure maximum uptime and minimum risk of lost data.
13.029		The VMS shall support a versatile rule system including scheduled or event-driven actions with numerous options including support to time profiles.

13.030		The VMS shall support Microsoft Windows XP Professional, Microsoft Windows Server 2003, Microsoft Windows Server 2008, Microsoft Windows Vista (Business/Enterprise/Ultimate) and Microsoft Windows 7 (Business/Enterprise/Ultimate) with the latest patches and service packs installed. The system must use DirectX and	
13.031		The VMS software shall include multicast and multi-streaming support.	
13.032		The VMS shall include automatic camera discovery.	
13.033		The VMS shall support archiving for optimizing recorded data storage through unique data storage solutions by combining performance and scalability with cost efficient long-term video storage.	

13.034		The VMS shall incorporate fully integrated matrix functionality for distributed viewing of any camera in the system from any computer with the client viewer.	
13.035		The VMS shall incorporate intuitive map functions allowing for multilayered map environment. The map functionality shall allow for the interactive control of the complete surveillance system, at-a-glance overview of system integrity, and seamless drag-and-drop integration with video wall module option	
13.036		The VMS shall support 56-bit encryption of video for export purposes.	
13.037		The VMS shall support full two-way audio between clients and remote devices. Two-way audio integration shall support the following features and functions	

13.038		The VMS software shall provide fast evidence export by exporting in video to various formats, including video from multiple cameras in encrypted native database format with an included viewer.	
13.039		The VMS shall show full awareness of the system through audit logs and shows user activity through comprehensive logs.	
13.040		The VMS shall include support for a frame work data module designed to integrate multiple third party Video Content Analysis (VCA) solutions seamlessly into client viewer environments.	
13.041		The VMS shall include a Software Development Kit (SDK) that offers important capabilities for integrating the VMS with third party software and applications.	

13.042		The VMS shall include a stand-alone viewer application to be included with video exported from the client viewer application. The viewer application shall allow recipients of the video to browse and playback the exported video without installing separate software on their computers	
13.043		The VMS shall include support for Active Directory to allow users to be added to the system. Use of Active Directory requires that a server running Active Directory, acting as a domain controller, to be available on the network.	
13.044		The VMS shall be designed to support each component on the same computer for efficiency in smaller systems, or each component on separate systems for large system deployments.	
13.045	**Edge Storage**		

13.046		Edge storage shall secure that when a lost or broken connection is back up, the data stored on the camera's internal storage shall be retrieved and stored in the media database.	
13.047		Edge storage shall secure that after recovery from a malfunction it shall be possible to play back and view the video, and audio recorded by the device, while the malfunction persisted	
13.048	**Bookmarking**		
13.049		A bookmarking feature shall be included in the VMS, allowing the client viewer users to mark incidents on live and/or playback video streams.	
13.050	**Privacy Masking**		
13.051		The VMS shall support privacy masking. The VMS should have an option for permanent or Liftable Masking.	

13.052	**Optimized Video Archiving**		
13.053		Administrators shall be able to select a storage container for each device and move a device from one storage container to another, or move all recordings inclusive archives to the new storage container, or delete them all.	
13.054		Administrators shall be provided with an overview of the defined storage containers, their archives with path, and free and used space on the drives for each device, including the used storage space in the recording database, and in archives.	
13.055	**Failover Support**		
13.056		The system shall support automatic failover for recording servers. This functionality must be accomplished by a failover server that shall work as a standby unit, which takes	

13.057		over in the event that one of a group of designated recording servers fails. Recordings shall be synchronized back to the original recording server once it is back online.	
13.058		The system shall support multiple failover servers for a group of recording servers.	
13.059		The system shall provide monitoring of all failover servers from the graphical alarm management module.	
13.060		The system shall provide seamless access to recordings on the failover Server for all clients through the same client views once the services are fully started.	
13.061	**Multicast Support**		

13.062		The system shall support multicasting of video feeds to client workstations in order to conserve network resources.Multicasting should be enabled from the recording servers and not directly from the cameras. Thus the IGMP network would be necessary only for the switches where server and clients are connected.	
13.063		Multicasting shall send a single stream of video to multiple clients, where the stream may be decoded and displayed on all clients simultaneously. This functionality shall support virtual matrix configurations.	
13.064		The infrastructure provided for the system shall support Internet Group Management Protocol (IGMP) for each remote network.	

13.065		The system shall automatically switch to unicast, if the client fails to connect to the multicast stream.	
13.066	**Multi-streaming Support**		
13.067		The recording server must accept, display and record individual streams of video from each camera that supports it, for example, display a stream in H.264 format and record another stream in MPEG4 format. The intent of this functionality shall be providing independent streams of video from the camera to the server with different resolution, encoding and frame rate.	
13.068		Multi-streaming support shall allow the system to be configured with H.264 with a high frame rate for live viewing and shall allow the system to be configured with high resolution H.264 at low frame rates for recording and playback.	

13.069		The system shall allow recorded video to be recorded at 8fps.	
13.070	**SNMP Support**		
13.071		The system shall act as an SNMP agent which can generate an SNMP trap as a result of rule activation in addition to other existing rule actions.	
13.072		The system shall be able to utilize Microsoft Windows SNMP Service for triggering of SNMP traps.	
13.073	**NAT Firewall Support**		
13.074		The system shall support port forwarding, which must allow clients from outside of a Network Address Translation (NAT) firewall to connect to recording servers without using a VPN	

13.075		Each recording server shall be mapped to a specific port and this port must be forwarded through the firewall to the recording server's internal IP address.	
13.076	**Management Server Redundancy**		
13.077		The management server shall provide a resilient system solution based on Windows Server Clustering, to secure maximum uptime.	
13.078	**Alarms Support**		
13.079		The alarm support shall allow for continuous monitoring of the operational status and event-triggered alarms from servers, cameras and other devices.	

13.080		The alarm support shall provide a real-time overview of alarm status, or technical problems, while allowing for immediate visual verification and troubleshooting.	
13.081	**Matrix Functionality**		
13.082		The system shall include an integrated matrix solution for distributing video to any computer with the client viewer installed. A computer on which the matrix-triggered images can be shown must be known as a matrix recipient.	
13.083		The client viewer shall provide remote users with a comprehensive suite of features	
13.084		It shall be possible to view live video from cameras on the surveillance system from 1 to 100 per view.	

13.085		It shall be possible to playback recordings from cameras on the surveillance system, with a selection of advanced navigation tools, including an intuitive timeline browser.	
13.086		It shall be possible to create and switch between an unlimited number of views, each able to display video from up to 100 cameras from multiple servers at a time. The system shall allow views to be created which are only accessible to the user, or to groups of users based on 37 different layouts optimized for 4 3, 4 3 Portrait, 16 9 and 16 9 Portrait display ratios.	
13.087		It shall be possible to access views of cameras on any PC with a client viewer application installed.	

13.088		It shall be possible to use multiple screens as well as floating windows for displaying different views simultaneously.	
13.089		It shall be possible to quickly substituting one, or more of a view's cameras with other cameras.	
13.090		It shall be possible to view images from several cameras in sequence in a single camera position in a view – a so called carousel.	
13.091		It shall be possible to view video from selected cameras in greater magnification and/or higher quality in a designated hotspot.	
13.092		It shall be possible to receive and send video through the matrix functionality.	
13.093		It shall be possible to include HTML pages and static images (for example, maps, or photos) in views.	

13.094		It shall be possible to control PTZ cameras.	
13.095		It shall be possible to use digital zoom on live as well as recorded video.	
13.096		It shall be possible to activate manually triggered events.	
13.097		It shall be possible to activate external outputs (e. g. lights and sirens).	
13.098		It shall be possible to use sound notifications for attracting attention to detected motion.	
13.099		It shall be possible to get quick overview of sequences with detected motion.	
13.100		It shall be possible to get quick overviews of alerts.	
13.101		It shall be possible to quickly search selected areas of video recording for motion.	
13.102		It shall be possible to skip gaps during playback of recordings.	

13.103		It shall be possible to configure and use several different joysticks.	
13.104		It shall be possible to print images, with optional comments.	
13.105		It shall be possible to copy images for subsequent pasting into word processors, email,etc.	
13.106		It shall be possible to export recording (for example, for use as evidence) in AVI, JPEG and database formats.	
13.107		It shall be possible to use pre-configured as well as customizable keyboard shortcuts to speed up common actions.	
13.108		It shall be possible to insert overlay buttons, for example, for activation of speakers, events, outputs, movement of cameras etc.	

13.109		It shall be possible to use a sequence function that lists thumbnail images representing recorded sequences from an individual camera or all cameras in a view	
13.110		It shall be possible to use a forced playback mode allowing the user to playback recorded video from inside the 'live' mode while viewing 'live' video.	
13.111		The client viewer shall support the use of 3-axis USB joysticks for control of pan, tilt, zoom and auxiliary camera functions.	
13.112		The client viewer shall support the use of multimedia control devices, which are capable of emulating keystrokes, for the efficient review of recorded video.	

13.113		The client viewer shall support the use of keyboard shortcuts for control of standard features. It shall allow the user to program numerical keyboard shortcuts for camera views. The shortcut number shall be displayed with the view description in the live and playback displays. The shortcut shall allow the user to change views with 2 to 3 keyboard	
13.114		The client viewer shall support Nvidia GPU or equivalent GPU based video decoding to improve video rendering performance and up to 75% reduction in CPU load of the workstation running Client software. The use of Nvidia GPU or equivalent GPU based video rendering shall also make client ready for 4K/UHD camera technology. Bidder to provide the list of Certified GPU's	

13.115		The client viewer shall have the capability to receive multicast streams. The client viewer shall have the capability to detect if the network becomes unreliable and to automatically switch to unicast to ensure that the operator is able to	
13.116		The operator shall have the ability to use digital zoom where the zooming is performed in the image only on any number of cameras simultaneously. This functionality shall be the default for fixed cameras. The use of digital zoom	
13.117	**Map Functions**		
13.118		Built-in map function in the client viewer shall provide an intuitive overview of the system and shall offer integrated access to all system components.	
13.119		Map function shall be able to use standard graphical file formats including jpg, gif, png,tif, etc.	

13.120		It shall be possible to use any number of layered maps, and it shall be possible to easily drag-and-drop and point-and- click definition of cameras, servers, microphones, speakers, I/O devices, hot-zones, and PTZ camera presets	
13.121		Hot zones shall be allowed for intuitive navigation between different map levels.	
13.122		Map function shall support instant camera preview when moving the mouse pointer over a specific camera.	
13.123		Map function shall support central overview of the surveillance system via an alarm list containing alarm indicators of high, medium or low prioritized alarms. Furthermore, the	

13.124		alarms shall be categorized by the following states; new, in progress, on hold, or closed. Alarms must be possible to acknowledge by right-clicking elements on maps	
13.125	**Remote Client Viewer**		
13.126		The web-based remote client viewer shall offer live view of up to 16 cameras, including PTZ control with joystick, fisheye (360 degrees) cameras and event/output activation. The playback function shall give the user concurrent	
13.127		The web-based remote client viewer shall offer quick overviews of sequences with detected motion.	
13.128		The web-based remote client viewer shall be able to generate and export evidence in AVI (movie clip) and JPG (still image) formats.	

13.129		The system shall support the use of separate networks, VLANs, or switches for connecting the cameras to the recording servers providing physical network separation from the clients, and facilitate the use of static IP addresses for the	
13.130		The system shall support H.264, MPEG-4 (Part 2), MPEG-4 ASP, MxPEG, and MJPEG compression formats for all analog cameras connected to encoders, and all IP cameras connected to the system	
13.131		The system shall support dual-streaming cameras and shall cover the following compression formats H.264, MPEG-4 (Part 2) and MJPEG.	

13.132		The recording server shall utilize high performance ISCSI, SCSI, SAS and SSD disk drives for online recording storage and shall allow the use of lower cost SATA drives for the RAID arrays for online archive storage. Use of online archiving shall	
13.133		The system shall allow the frame rate, bit rate and resolution of each camera to be configured independently for recording. The system shall allow the user to configure groups of cameras with the same frame rate, bit rate and	
13.134		The recording server(s) shall have the ability to support multiple Network Interface Cards (NIC) and shall support connection to the cameras on a network separate from the client viewer, management server and system manager.	

13.135		The recording server shall have the ability to accept the full frame rate supplied by the cameras, while recording a lower frame rate yet still shall make the higher frame rate available to the clients for live viewing	
13.136		The Recording server shall have the ability to handle Video Motion detection on Nvidia GPU or equivalent GPU to optimize the server requirement.	
13.137	**Remote Mobile App**		
13.138		Shall be available on internet as an application for compatible smartphone and Tablets	
13.139		Shall support Android as well as Apple IOS software, with respective smart phones	
13.140		Full screen video supported, cameras shuffle from left to right or right to left supported	
13.141		Digital pinch to zoom supported	

13.142		Control of PTZ from mobile app	
13.143		Use of the mobile device's camera as a camera in the VMS	
13.144	**Licensing**		
13.145		VMS shall have simplified licensing module with single base license which may include Unlimited Management, Recording and Failover servers across multiple sites.	
13.146		VMS shall support unlimited Thick clients, Web Clients and remote clients whenever and where ever required for free of cost without any activation needed.	
13.147		VMS shall have licensing based on Camera MAC ID and not server-based licenses. Any replacement of faulty camera should not affect the total available licenses.	

13.148		VMS Shall allow to combine multiple sites with different management servers under one parent management server without any additional cost. This should allow customer to manage and monitor cameras centrally without need to log-	
13.149		VMS shall allow parallel / DR site recording of single camera without any additional license cost.	
13.150		VMS should support ONVIF Profile S, G, T & Q or higher	
13.151		VMS shall be a full member of ONVIF or affiliated to a Full member	
13.152		VMS Should support a minimum throughput of 3 Gbps or higher	
13.153		Vendor should provide detailed Storage calculation for a period of 90 days at 15FPS for Motion Based recording for Indoor Cameras and Continuous recording for Outdoor Cameras at Full HD Resolution (1920 x 1080) H.264 codec with	

14	**Workstation with graphics card for Monitoring**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**4**
14.01	Chassis	Tower	
14.02	Processor	Intel i7 12th Gen 12 core Processor with Base Frequency of 2.1 Ghz or equivalent	
14.03	L3 Cache Memory	25 MB L3 cache or better	
14.04	Memory	32GB (2*16GB) Fully buffered DDR5 @4800 SDRAM or better	
14.05	Memory Scalability	DIMM slots 4, scalable upto 128 GB	
14.06	Drive Bays	1 slim ODD; One 5.25" ODD; One 2.5" HDD; Two 3.5" HDD or higher	
14.07	Hard Disk Drivers	2 x 1TB for M.2 Disks or better	
14.08	Optical Drive	DVD-RW Combo with dual layer write capability	
14.09	Graphics Card	16 GB graphics card or better	
14.10	Network	2 x 1 G Network Ports including the LOM Port	
14.11	Bus Slots	3 PCIExpress slots, atleast 2 with PCIe 3.0, expandable or better	
14.12	I/O ports and connectors	9 USB Ports or better	

14.13	Monitor	27' TFT wide screen display with Full HD support with integrated speakers should be from same Manufacturer as Workstation	
14.14	Keyboard	USB 2.0 Standard keyboard should be from same Manufacturer as Workstation	
14.15	Mouse	USB 2.0 optical scroll mouse should be from same Manufacturer as Workstation	
14.16	OS certification	windows 11 Pro certificate from Microsoft Website to be provided	
14.17	Operating System	Windows 11 Pro 64 bit or better	
14.18	Other Accessories	Indian Standard power cord system recovery, Drivers & Utilities DVDs	
14.19	Defective Media Retention	Hard drive will not be returned if it malfunctions even during warranty period because of security policy	
15	**55" Wall Mount Monitor**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**6**
15.01	Diagonal Size	55"	

15.02	Display Type	60Hz E-LED	
15.03	Panel Type	IPS / VA	
15.04	Resolution	3840 x 2160	
15.05	Brightness	500 Nits	
15.06	Operation	24 x 7 Continuous Operation	
15.07	Contrast Ratio	4000:1 or better	
15.08	Operating System	Tizen / WebOS	
15.09	Inputs	Display Port 1.2 (1), HDMI 2.0 (3)HDCP2.2 USB 2.0 x 2	
15.10	Output	Stereo mini Jack, RS232C(in/out), RJ45, BT.Wifi	
15.11	Power	230 V 50 Hz Input	
15.12	Speaker	10W x 2	
15.13	Viewing Angle	178:178	
15.14	Operating Temperature	0 to 40 deg C or better	
15.15	Certification	IS or equivalent	
16	**42 U Rack with 4 Nos Power Strips**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**1**
16.01	Load rating	500kg or better	
16.02	Width	800mm	
16.03	Depth	1200mm	

16.04	Color	Dark	
16.05	Accessories	Cooling fans (4 X 90 CFM), cable management and mounting accessories, AC mains channel, Caster wheels with brake Surge protected power strip rack mountable with 12x 5A/ 16A Dual sockets: 4nos	
16.06	Features		
16.07		Conforms to DIN41494- and current industry practices	
16.08	Steel doors - plain vented at bottom		
16.09	Fully perforated and dual perforated glass doors with optional vented side trims for		
16.10	Compatible for the mounting of all types of 19" equipments		

17	**Pole (6 meters) for Mounting Outdoor Camera**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**16**
17.01	Material	Aluminum / MS	
17.02	Height	6 Mtrs	
17.03	Wind loads for design	As per IS875	
17.04	Metal protection treatment for Monopole	HOT DIP Galvanized confirming BSEN ISO 1461 and two or more layers of epoxy coating	
17.05	Accessibility option for installation and maintenance of cameras		
18	**Pole/Pipe Earthing Kit**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**16**
18.01	Material	Maintenance free rod earth pit	

18.02	Rod Construction	Low carbon copper coated earth rod of 2000 MM electrode having diameter of 17.2 mm with copper coating thickness of 250micron tested as per IEC 62561-2	
18.03	Clamp	universal clamp made of SS to connect rod with flat conductor	
18.04	Earthing Compound	Earth conductivity enhancing compound shall be of 25 kg/pit tested as per IEC 62561-7,TCLP tested The compound should be highly conductive non-corrosive compound around rod electrode to get the desired earth resistance value as low as possible and as per soil condition but not less than 3 meters .	

18.05	Earth Inspection Chamber	The above arrangements shall be provided with Earth Housing Pit is made of high-grade polypropylene for high strength and stress levels, allowing it to withstand a maximum load of 2000 kg to ensure the safety of earthing system	
18.06	Certification	UL Listed & CPRI Certification	
19	**Labour works for Pole erection and grounding fixing and installtion of earthing kit**		**16**
19.01	Work Involved	Pit Digging in rocky soil (earth work) for Outdoor poles	
19.02	Size	600mm (width) by 600mm (length) by 1000mm (depth)	
19.03	Purpose	For erection of the outdoor poles and filling with cement concrete and properly bed finish above ground level. And also cable ducts (pipes) should be done in the concrete bed for routing the cables, and proper installtion of the Earthing Kit for the pole.	

20	IP66 stainless steel outdoor junction box with MCB & RCCB	Specify the Make, Model, Part number & URL of the offered product for all items including accessories	16
20.01	MCB	1 No 2 Pole Miniature circuit breakers 9 KA / 10 KA breaking capacity with universal screw conforming to IS 8828 with latest amendments	
20.02	RCCB	1 No 2 Pole 25 A 240V IP 20 protected terminals with 35 sq mm terminals confirming to IS Standards	
20.03	Junction Box	Outdoor,rated IP 66 or better	
20.04	Material	Enclosure: Stainless steel Door: Stainless steel, all-round foamed-in PU seal Mounting plate: Sheet steel Stainless steel 22.05 Surface finish Brushed 1.4301 (AISI 304	
20.05	Surface finish	Brushed	
20.06	Impact Protection	IK10	
20.07	Size	500mm x 210 mm x 500mm (W x D x H)	

20.08	Mount	Pole Mount accesory from Manufacturer of Junction box to be provided	
20.09	Rail	DIN Rail Kit to be provided to mount MCB in the Junction Box	
20.10	Addiitonal Parameters	Provision for placing Surge arrester, MCB, DB, midspan, Splice Tray and other accessories	
20.11	Addiitonal Parameters	All cables should be run internally through the pole.	
20.12	Addiitonal Parameters	Network and Elecrical cables should be laid independently through 2 different PVC pipes.	
20.13	Addiitonal Parameters	There should be provision to lay power and STP cables from bottom to top of the pole through high quality PVC pipe with appropriate pipe holders.	
21	**Labour works for IP66 stainless steel outdoor junction box**		**16**
21.01	Type	Pole Mount	

21.02	Work Involved	Termination and Fixing of Pole Mount Box with CAT6 LAN Terminations and other required connections	
22	**Network Surge Protector - Outdoor**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**55**
22.01	Casing	Metallic box with connectors input/output or better	
22.02	Connectors	RJ45 shielded connectors Female input/output RJ45 10BASE-T/100BASE-TX/1000BASE-T PoE	
22.03	Protection type	IP66 or better	
22.04	Nominal voltage	48Vdc	
22.05	Max. continuous operating voltage	60Vdc or better	
22.06	Max. discharge current	2kA or better	
22.07	Temperature range:	0°C to +50°C or better	
22.08	Test standards	UL certified or better	
23	**Network Surge Protector - Indoor**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**40**

23.01	Casing	Metallic box with connectors input/output or better	
23.02	Connectors	RJ45 shielded connectors Female input/output RJ45 10BASE-T/100BASE-TX/1000BASE-T PoE	
23.03	Protection type	IP20 or better	
23.04	Nominal voltage	48Vdc	
23.05	Max. continuous operating voltage	60Vdc or better	
23.06	Max. discharge current	2kA or better	
23.07	Temperature range:	0°C to +50°C or better	
23.08	Test standards	UL certified or better	
24	**Powerline Surge Protector**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**16**
24.01	Nominal voltage	230V AC +/- 10%	
24.02	Max. continuous operating voltage	270V AC or better	
24.03	Nominal discharge surge current In (8/20µs)	20 kA or better	
24.04	Max. discharge surge current Imax (8/20µs)	40kA or better	
24.05	Total Maximum discharge current Imax (8/20µs)	80kA or better	

24.06	Temperature range:	0°C to +50°C or better	
24.07	Test standards	UL1449 certified or better	
25	**Cat-6 4 pair UTP cable (Boxed rolls of 305 Meters)**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**7**
25.01	Jacket Material	Low Smoke Zero Halogen (LSZH)	
25.02	Conductor Material	Bare copper	
25.03	Insulation Material	Polyolefin	
25.04	Cable Length	305 m	
25.05	Diameter Over Jacket, nominal	5.842 mm	
25.06	Jacket Thickness	0.559 mm	
25.07	ANSI/TIA Category	6	
25.08	Characteristic Impedance	100 ohm	
25.09	dc Resistance Unbalance, maximum	5%	
25.10	dc Resistance, maximum	7.61 ohms/100 m	
25.11	Delay Skew, maximum	45 ns	
25.12	Mutual Capacitance	5.6 nF/100 m @ 1 kHz	
25.13	Nominal Velocity of Propagation (NVP)	68%	
25.14	Operating Frequency, maximum	400 MHz	

25.15	Operating Voltage, maximum	80 V	
25.16	Transmission Standards	ANSI/TIA-568-C.2 | CENELEC EN 50288-6-1 | ISO/IEC 11801 Class E	
25.17	Safety Voltage Rating	300 V	
25.18	Dielectric Strength, minimum	1500 Vac | 2500 Vdc	
25.19	Smoke Test Method	IEC 61034-2	
25.20	Acid Gas Test Method	IEC 60754-2	
25.21	Flame Test Method	IEC 60332-3-22	
25.22	Operating Temperature	0 °C to +50 °C	
25.23	Cable Type	U/UTP (unshielded)	
25.24	Pairs, quantity	4	
25.25	Conductor Gauge, singles	23 AWG	
25.26	Pulling Tension, maximum	11 kg	
25.27	Regulatory Compliance/Certifications	RoHS 2011/65/EU ISO 9001:2015	
26	**Labour works for CAT6 UTP Cable Laying**		**7**
26.01	Type of cable	UTP Cable	
26.02	Work Involved	LAN cables are to be routed in PVC channels / cable trays wherever cables are required as per user guidance	

27	LC-LC Singlemode Duplex Patch Cord, 3 Meter	Specify the Make, Model, Part number & URL of the offered product for all items including accessories	70
27.01	Fiber Type	OS2	
27.02	Total Fibers, quantity	2	
27.03	Jacket Color	Yellow	
27.04	Fiber Mode	Singlemode	
27.05	Cord Length	3.00 m	
27.06	Diameter Over Jacket	1.80 mm	
27.07	Environmental Space	Low Smoke Zero Halogen (LSZH)	
27.08	Interface, connector A	LC/UPC	
27.09	Interface, connector B	LC/UPC	
27.10	Polarity	Pairs, flipped	
27.11	Insertion Loss, maximum	0.30 dB	
27.12	Return Loss, minimum	45.0 dB	
27.13	Regulatory Compliance/Certifications	RoHS 2011/65/EU	
28	6 Port LIU loaded with SM Pigtail	Specify the Make, Model, Part number & URL of the offered product for all items including accessories	25
28.01	Fiber Mode	Singlemode	
28.02	Fiber Type	OS2	

28.03	Finish	Powder coated	
28.04	Material Type	Aluminum	
28.05	Shelf Movement	swivel tray	
28.06	Body Style	Symmetrical	
28.07	Functionality	Patching | Splicing	
28.08	Interface, front	LC	
28.09	Splice Trays Included, quantity	1	
28.10	Splicing Type	Heat shrink, single fiber fusion	
28.11	Form Factor	6 Port should be DIN Rail Mountable	
28.12	Total Ports, quantity	6	
28.13	Insertion Loss, maximum	0.30 dB	
28.14	Return Loss, minimum	45.0 dB	
28.15	Regulatory Compliance/Certifications	RoHS 2011/65/EU	
29	**24 Port LIU loaded with SM Pigtail**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**3**
29.01	Fiber Mode	Singlemode	
29.02	Fiber Type	OS2	
29.03	Finish	Powder coated	
29.04	Material Type	Steel	

29.05	Shelf Movement	Sliding	
29.06	Body Style	Symmetrical	
29.07	Functionality	Patching | Splicing	
29.08	Interface, front	LC	
29.09	Splice Trays Included, quantity	1	
29.10	Splicing Type	Heat shrink, single fiber fusion	
29.11	Form Factor	24 Port should be Rack Mountable within 1 U	
29.12	Total Ports, quantity	24	
29.13	Insertion Loss, maximum	0.30 dB	
29.14	Return Loss, minimum	45.0 dB	
29.15	Regulatory Compliance/Certifications	RoHS 2011/65/EU	
30	**Cat 6 SL Series Patch cord-yellow color**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**110**
30.01	Cord Length	1.5 meters	
30.02	ANSI/TIA Category	6	
30.03	Environmental Space	Low Smoke Zero Halogen (LSZH)	
30.04	Operating Temperature	0 °C to +50 °C	
30.05	Relative Humidity	Up to 93%, non-condensing	
30.06	Safety Standard	UL 1863	

30.07	Cable Type	U/UTP (unshielded)	
30.08	Interface, connector A	RJ45 plug	
30.09	Interface, connector B	RJ45 plug	
30.10	Jacket Color	Yellow	
30.11	Conductor Type	Stranded	
30.12	Conductor Gauge, stranded	24 AWG	
30.13	Plug Insertion Life, minimum	750 times	
30.14	Wiring	T568B	
30.15	Regulatory Compliance/Certifications	RoHS 2011/65/EU	
31	**Cat 6 STP Patch cord for Outdoor Camera**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**16**
31.01	Cord Length,	5 Meters	
31.02	ANSI/TIA Category	6 / 6A	
31.03	Environmental Space	Low Smoke Zero Halogen (LSZH)	
31.04	Operating Temperature	0 °C to +50 °C	
31.05	Relative Humidity	Up to 93%, non-condensing	
31.06	Cable Type	STP	
31.07	Interface, connector A	RJ45 plug	
31.08	Interface, connector B	RJ45 plug	

31.09	Jacket Color	Yellow	
31.10	Conductor Type	Stranded	
31.11	Conductor Gauge, stranded	26AWG	
31.12	Plug Insertion Life, minimum	750 times	
31.13	Wiring	T568B	
31.14	Regulatory Compliance/Certifications	RoHS 2011/65/EU	
32	**Cat 6 24-port loaded, Modular Jack Panel, 1U**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**4**
32.01	ANSI/TIA Category	6	
32.02	Flammability Rating	UL 94 V-0	
32.03	Operating Temperature	-10 °C to +60 °C	
32.04	Safety Standard	cUL | RCM | UL	
32.05	Total Ports, quantity	24 Port Fully Loaded	
32.06	Cable Type	Unshielded	
32.07	Panel Style	Straight	
32.08	Material Type	High-impact, flame retardant, thermoplastic | Powder-coated steel	
32.09	Regulatory Compliance/Certifications	RoHS 2011/65/EU ISO 9001:2015	

33	**Labour works for CAT6 Patch Panel Fixing & Termination per piece**		4
33.01	Type of Patch Panel	CAT6 Patch panel	
33.02	Work Involved	Fixing and termination of 24 Ports in CAT6 Patch Panel	
34	**CAT 6 with Dual I/O faceplate and back box**	Specify the Make, Model, Part number & URL of the offered product for all items including accessories	10
34.01	Total Ports	2	
34.02	Regulatory Compliance/Certifications	RoHS 2011/65/EU	
35	**Labour works for CAT 6 with Dual I/O faceplate and back box**		10
35.01	Type of Box	Surface Mount Box	
35.02	Work Involved	Termination and Fixing of Surface Mount Box with CAT6 LAN Terminations and other required connections	
36	**12U Wall Mount Rack**	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	7

36.01	Accessories	Cooling fans (4 X 90 CFM), cable management and mounting accessories, AC mains channel, Surge protected power strip rack mountable with 6x 5A/ 15A Dual sockets: 2nos	
36.02	Rack Standard	Conforms to DIN 41494	
36.03	Construction	Welded	
36.04	Front Door	Lockable Toughended Glass Door	
36.05	Basic Frame	Steel	
36.06	Equipment Mounting	DIN Standard Slots	
36.07	Mounting Angle	19" Mounting angle made of formed steel	
36.08	Standard Finish	Powder Coated	
36.09	Top and Bottom Cover	Welded to Frame, Vented and Cable entry exit cut outs	
36.10	Static Load	40 Kgs or better	
37	**Labour works for 12U Wall mount Rack**	**Specify the Make, Model, Part number & URL of the offered product** **for all items including accessories**	**7**
37.01	Type of Rack	12U Wall mount Rack	

37.02	Work Involved	Fixing of Rack on the wall and installing Switches and Routing of all Cables UTP, Power, Fibre Cables in the rack	
38	**Labour works for Laying the Cable Manager - 200 Mtrs*****		**200**
38.01	Size	100mm x 50 mm Rectangle Cable Manager	
38.02	Purpose / Application	To be installaed in the server room along with the racks	
39	**Labour works for 1.5" PVC Conduit Laying per Meter - 300 Mtrs *****		**300**
39.01	Type of cable	UTP & Power cables	
39.02	Work Involved	LAN cables are to be routed in PVC channels wherever cables required as per user guidance	
40	**12 Core OFC (12 core SM outdoor / Indoor armoured direct burial) - 1500 Mtrs *****	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**1500**
40.01	type of cable	12f unitube armoured optical fiber cable	

40.02	standards	en 50173; iso/iec 11801, ansi/tia-568-c.3, telcordia gr-409	
40.03	fiber	single mode fiber	
40.04	fiber size	9/125/250 (os2)	
40.05	no. of fibers / loose tube	12f	
40.06	fiber identification	blue, orange, green, brown, grey & white	
40.07	optical parameters	Single Mode	
40.08	attenuation @ 1310nm db/km	< 0.34 (max)	
40.09	attenuation @ 1550nm db/km	< 0.22 (max)	
40.10	attenuation @ 1380 - 1386nm	< 0.31 (max)	
40.11	point discontinuity db	< 0.1	
40.12	cut-off wavelength	< 1260	
40.13	chromatic dispersion @ 1310 nm (ps/nm x km)	< 3.5	
40.14	core/mode-field (um)	9	
40.15	cladding (um)	125	
40.16	coating (um)	250	
40.17	material	pbtp	
40.18	diameter	3 +/- 0.2	

40.19	loose tube gel	water blocking gel	
40.20	jacketing material	hdpe	
40.21	armouring	corrugated steel tape	
40.22	ms tape thickness	> 0.15	
40.23	minimum installation bend radius (mm)	200	
40.24	minimum service bend radius (mm)	160	
40.25	tensile strength (n)	1250	
40.26	maximum crush resistance (n)	3000	
40.27	operating temp	0 to 50 deg c	
41	**Labour works for Laying cables in the existing cable trench per Meter - 1500 Mtrs*** **		**1500**
41.01	Type of cable	UTP, OFC and Power cables	
41.02	Work Involved	12 Core OFC cables/Power cables are to be routed in HDPE pipes wherever treches made for all outdoor applications	
42	**HDPE Pipe - 1000 Mtrs*** **	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**1000**

42.01	Type	HDPE	
42.02	Size	32mm diameter or higher	
42.03	Material Grade	PE80 or better	
42.04	Purpose / Application	Routing the Outdoor Fiber cables, power cables, CAT6	
42.05	Standard	ISI mark standard	
43	**Specifications of Labour works for Laying HDPE Pipe per Meter - 1000 Mtrs***		**1000**
43.01	Type	HDPE	
43.02	Work Involved	HDPE PIPE to be routed through the existing/ newly dug trenches for routing of UTP, OFC and Power cables	
44	**Labour works for Laying cables inside the HDPE Pipe per Meter - 1000 Mtrs***		**1000**
44.01	Type cable	UTP, OFC and Power cables	
44.02	Work Involved	UTP, OFC and Power cables are to be routed in HDPE pipes wherever treches made for all outdoor applications	

45	**Cable Router Markers - 75 Nos***	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**75**
45.01	Type	: Circular / Rectangle / Triangle shape with Mounting rod	
45.02	Size	: Suitable for Writing the cables details	
45.03	Purpose / Application	: Installing along the outdoor cable routes above the cable trenches	
46	**Labour works for fixing of cable route markers - 75 Nos***		**75**
46.01	Work Involved	Fixing of the cable route markers with cement concrete along the cable trenches as per user guidance	
47	**40 mm Casing and Capping - 100 Mtrs***	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**100**
47.01	Type	: Thermoplastic	
47.02	Application	: Laying CAT 6 Cable	
47.03	Size	: 40mm (minimum)	
47.04	Standards	: ISI mark standard	

48	**Labour works for 40mm PVC Casing Caping - 100 Mtrs***		100
48.01	Work Invloved	Cables are to be routed in PVC Casing wherever cables required as per user guidance	
49	**3 Core Armoured 1.5 Sqmm power cable (Mtrs) - 1000 Mtrs***	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	1000
49.01	1.1KV grade, 3Core/1.5 mm2, XLPE/PVC insulated and PVC overall sheathed, standard copper conductor, flat steel strip/wire armored cables conforming to IS Standards	To be supplied	
49.02	The cable shall bear ISI certification mark	To be conformed with	
50	**Labour works for routing 1.5 Sq mm Armored Power cable in the HDPE pipe per Meter - 1000 Mtrs***		
50.01	Type of cable	Armored 3 core shielded 1.5sqmm power cable	
50.02	Purpose	Armoured power cables are to be routed in HDPE pipes whever treches made for all outdoor applications	

51	**Supply of RJ45 MALE JACK with Boot - 300 Nos*****	**Specify the Make, Model, Part number & URL of the offered product for all items including accessories**	**300**
51.01	ANSI/TIA Category	6 or better	
51.02	Current Rating, maximum	250V AC max at 2A or better	
51.03	Insulation Resistance, minimum	500 MOhm or better	
51.04	Operating Temperature	0 °C to +50 °Cor better	
51.05	Cable Type	Round, unshielded or better	
51.06	Interface	RJ45or better	
51.07	Conductor Type	Solid | Stranded or better	
51.08	Contact Plating Material	Gold	
51.09	Plug Insertion Life, minimum	750 times or higher	
51.10	Termination Type	IDC or better	
51.11	Regulatory Compliance/Certifications	IS/RoHS 2011/65/EU or better	
52	**Labour works for RJ45 Crimping/termination - 300 Nos*****		**300**
52.01	Type of cable	UTP/STP cable	
52.02	Work Involved	Crimping/termination of RJ45 Connectors for UTP/STP Cables	

53	**Labour works for Splicing of OFC cable cores - 50 Nos***		**50**
53.01	Work Involved	Splicing of the all cores of the OC cables incluidng sizing the cores, inserting in trays, routing cores in splicing tray, tagging, Labeling, testing etc.	
54	**Labour works for Pit/trench Digging in rocky soil (earth work) per Meter - 1000 Mtrs***		**1000**
54.01	Size	400mm (width) by 750mm (depth)	
54.02	Work Involved	Digging the trench of 400mm (width) by 750mm (depth) for routing the HDPE pipe/Cables	
54.03	Cable Protection	Placing of Brick blocks/concrete sheets above the Cables/HDPE pipe for protection of cables in the trench	
54.04	Purpose	For routing the data & power cables. The mud/sand has to be filled above the brick blocks / concrete sheets for the protection of the cables/HDPE pipes which are at the bottom of the trench	
55	**Labour works for Road cutting (in rocky soil) - 100 Mtrs***		**100**

55.01	Work Involved	Road cutting in rocky soil	
55.02	Size	400mm (width) by 750mm (depth)	
55.03	Cable Protection	Placing of Brick blocks/concrete sheets above the Cables/HDPE pipe for protection of cables	
55.04	Purpose	For routing the HDPE pipe / data & power cables and re-filling putting cement concrete across the road in digged area smoothly at the road level after laying the cables above the brick block / concrete sheet	
56	**Resident Engineer (OPTIONAL) - 1 No**		**1**
56.01	Scope of Work	Daily status checks, including Cameras working status, its coverage and Monitor display status verification, and up keeping should be carried out for CCTV Cameras, Servers & Storage systems and logs/ reports should be maintained	

56.02		Frequent status reports and up keeping of other system components as mentioned below should be carried out: a.Switches.b.Workstations.c.Monitors.d.Cables.e. PoE injectors. Etc	
56.03		Frequent dusting of servers, consoles, monitors and checking of network ports should be carried out.	
56.04		Frequent status reports should be generated monthly and submitted to concerned engineer in- charge	
56.05	Payment for Resident Engineer	Payments will be released quarterly subjected to certification from concerned engineer in-charge.	
57	**Installation and commissioning charges**	Installation and commissioning charges for the Turnkey installation of the total system	**1**

* PREFERRED SPECIFICATIONS

*** payment based on actual usage at site