SURAT MUNICIPAL CORPORATION

ADDENDUM & CORRIGENDUM-4

REQUEST FOR PROPOSAL

For

SELECTION OF IMPLEMENTATION AGENCY FOR INTEGRATED TRAFFIC CONTROL SYSTEM (ITCS) IN SURAT CITY

Tender Number: SSCDL-Traffic-ITCS-RFP-01-2016

Last date for Price Bid Submission: 28. 02. 2017

Smart City

Invited by

Surat Smart City Development limited

115, Smart City Cell, Surat Municipal Corporation,
Muglisara, Main Road, Surat - 395003, Gujarat.

Surat Smart City Development Limited

ADDENDUM AND CORRIGENDUM 4

RFP Notification No.: SSCDL-Traffic-ITCS-RFP-01-2016

The Bidder are requested to take note of the following changes made in the RFP documents, which are to be taken in to account while submitting the RFP. They shall be presumed to have done so and submitted the RFP accordingly.

- This Addendum and Corrigendum shall be the part of the RFP documents.
- All items specified in this Addendum and Corrigendum supersede relevant items to that effect as provided in the original RFP documents. All other specifications, terms and conditions of the original RFP document shall remain unchanged.
- Bidder shall read and consider following points, which shall be a part of the RFP documents.
- **The queries raised and given by SIs, but the clarifications are not made in this Addendum and Corrigendum shall be considered to remain unchanged as per the terms and conditions mentioned in the original RFP documents.**

<table>
<tr><th>Sr. No.</th><th>Section</th><th>Page No.</th><th>Tender Reference</th><th>Existing Clause</th><th>Amended/New Clause</th></tr>
<tr><td>1</td><td>Sr. No.-6</td><td></td><td>Electrical works and power supply- Addendum & Corrigendum- 3</td><td>Reference: Addendum & Corrigendum-3
The SI shall directly interact with electricity boards for provision of mains power supply at all desired locations for ITCS field solution. The SI will be responsible to submit the electricity bill including connection charge, meter charge etc. to the electricity board directly. SI shall have to submit the challan of bill submission to SSCDL. SSCDL will reimburse the amount submitted to the SI after verification. The recurring electricity charges will be borne by SMC as per actual consumption.</td><td>The SI shall directly interact with electricity boards for provision of mains power supply at all desired locations for ITCS field solution. The recurring electricity charges will be borne by SMC as per actual consumption. The SI shall be responsible to submit the electricity bill including connection charge, meter charge etc. to the electricity board directly. SI shall have to submit the challan of bill submission to SSCDL. SSCDL will reimburse the amount submitted to the SI after verification in next billing cycle.</td></tr>
<tr><td>2</td><td>Sr. No.-8</td><td></td><td>Public Address System.- Addendum & Corrigendum- 3</td><td>The System Integrator shall install IP based Public Address System as part of the information dissemination system at 267 locations (i.e at all junctions) in the city. These systems shall be deployed at identified junction to make public interest announcements. The system deployed shall be IP based and have the capability to be managed and controlled from the TCC.</td><td>The Clause stands removed from the scope of work.</td></tr>
<tr><td>3</td><td>8.16</td><td>154</td><td>Variable Message Sign Boards 2(Point no-1)</td><td><table><tr><th>#</th><th>Parameter</th><th>Description</th><th>Bidder Compliance</th></tr><tr><td>1</td><td>Dimensions</td><td>3.0m length X 1.5m height X 0.2m depth. (3000mm x 1500mm X 200mm approx)</td><td></td></tr></table></td><td><table><tr><th>#</th><th>Parameter</th><th>Description</th><th>Bidder Compliance</th></tr><tr><td>1</td><td>Dimensions</td><td>Minimum 3.0m length X 1.5m height X 0.2m depth. (3000mm x 1500mm X 200mm approx.)</td><td></td></tr></table></td></tr>
<tr><td>4</td><td>8.26</td><td>167</td><td>Data Center TOR (Top of the Rack) Switch. Point-13 (Ports)</td><td>Data Center TOR (Top of the Rack) Switch.</td><td>Data Centre TOR Switch should be read as “Core Switch”</td></tr>
<tr><td>5</td><td>8.34</td><td>182</td><td>IP Phone Specifications</td><td>IP Phone Specifications</td><td>The clause (IP Phones & IP PBX) stands removed from the scope of work</td></tr>
<tr><td>6</td><td>8.25 to 8.32</td><td></td><td></td><td></td><td>Please refer Annexure-I for the revised technical Specifications. The specifications which are not mentioned are as per RFP and Addendum & Corrigendum 3</td></tr>
</table>

Sr. No.	Section	Page No.	Tender Reference	Existing Clause	Amended/New Clause
	Annexure-XIV		Addendum & Corrigendum- 3		Please refer Annexure-II for the revised technical Specifications of fish eye camera.

Note: All the above changes to be read across the RFP, Addendum & Corrigendum, wherever applicable.

Important Points to be considered by the Bidder:

1. Location detail of the DATA Centre: Initially data center & control center may established at different or same location. However both of them will be migrated to IT-MAC once it gets operational. The detail of the location of temporary DC & CC will be shared with the selected vendor. SSCDL will ensure that sufficient space shall be allocated to the selected bidder.
2. The SSCDL needs to be fully informed of the results of the survey and the amount and extent of the demolition and site clearance shall then be agreed with the SSCDL. Selected bidder has to inform & take necessary approval from SSCDL/SMC in advance (minimum 2 weeks) for the digging or excavation required wrt ROW/RI. The bidder is required to submit the detailed plan with drawing for approval
3. The bidder should provide connectivity over MPLS network till the ITCS system will migrated on Connected Surat network. It is necessary that at least 80% of the proposed last mile connectivity should be wired. Last Mile to be defined as "the access link from the service provider's PoP – (as per Telco Standards) to the field device
4. RLVD system should capture the image/Video in day as well as in night. The evidence camera shall capture the status of the Red light at the time signal violation in colour mode. SLA should be maintained.
5. It is expected that selected bidder will develop a MIS system to support decision making in various emergency situations. The inputs for such systems will come from external applications deployed by SMC or other government departments - the selected bidder will be expected to develop integration mechanism to accept input from external systems. Information broadcasting will be triggered through the TCC developed by the selected bidder - source of data would be external applications deployed by SMC or other government departments or any manual triggers by personnel at command center
6. The selected bidder is expected to deploy an application that can report consolidated quarterly SLA performance report. Further Volume 2 (page 192) of RFP provides the functionalities of EMS which will be deployed by the selected bidder for efficient management of the system, reporting, SLA monitoring and resolution of issues
7. Spot speed detection is required in Speed violation system.
8. Airtime Management for VMS: It refers the duration for which any paid contained played on the VMS. Provision should be there to generate bills for the paid contain based on airtime.
9. E-Map: E-Map refers to any map like google maps which will be use to pin the location and monitor the incidents through maps. In future E-Map should be migrated to GIS platform that is being developed by SMC.
10. New Video wall is not in the scope of ITCS Project.

GM (IT)
Surat Smart City Development Ltd

Annexure I: Revised Technical Specifications of IT Component

8.25 Edge Level Switch (at Traffic Junctions)

#	Parameter	Minimum Specifications	Bidders Compliance (Yes, No)
1	Type	Managed Outdoor Industrial grade switch	
2	Total Ports	• Minimum 4 10/100/TX PoE/PoE+, 2x SFP Ports (can have 4xSFP Ports in certain locations) • May require higher port density at some locations, depending upon site conditions • May require fiber ports (for devices or for uplinks) at some locations, depending upon site conditions/distances.	
3	PoE Standard	IEEE 802.3af/ IEEE 802.3at or better	
4	Protocols	• IPV4,IPV6 • Support 802.1Q VLAN • DHCP support • IGMP • SNMP Management • Should support Loop protection and Loop detection • Should support Ring protection • End point Authentication • Should support NTP	
5	Access Control	• Support port security	

#	Parameter	Minimum Specifications	Bidders Compliance (Yes, No)
		• Support 802.1x (Port based network access control). • Support for MAC filtering • Support security group access control list	
6	PoE Power per port	Sufficient to operate the CCTV cameras/edge devices connected	
7	Enclosure Rating	IP 30 or equivalent Industrial Grade Rating(to be housed in Junction box)	
8	Operating Temperature	0 -50 C or better Industrial Grade Rating	
9	Multicast support	IGMP Snooping V1, V2, V3	
10	Management	Switch needs to have RS-232/USB/RJ45 console port for management via a console terminal or PC,Web GUI NTP, Syslog for log capturing SNMP V1,V2,V3	
11	Compliance	UL/EN/IEC or equivalent	

Layer 3 Gigabit Manageable Switch (To be used for DC/Aggregation Layer 3 Switch)

#	Parameter	Minimum Specifications	Bidders Compliance (Yes, No)
1	Ports	• 24 or 48 (as per requirements) 10/100/1000 Base-TX/FX ports and extra 2 or 4 nos of 10G Base SX/LX/LR ports as per network solution offered. • TX/FX Split as per field/site requirement • All ports can auto-negotiate between 10Mbps/ 100Mbps/ 1000Mbps, half-duplex or full duplex and flow control for half-duplex ports.	
2	Switch type	Layer 3	
3	MAC	32k or more	
4	Backplane	Properly sized Switching fabric capacity (as per network configuration to meet performance requirements of wire speed switching for the connected devices)	

#	Parameter	Minimum Specifications	Bidders Compliance (Yes, No)
5	Port Features	Must support Port Mirroring, Port Trunking and 802.3ad LACP Link Aggregation port trunks	
6	Flow Control	Support IEEE 802.3x flow control for full-duplex mode ports.	
7	Protocols	• IPV4, IPv6 • Support 802.1D, 802.1S, 802.1w, Rate limiting • Support 802.1Q VLAN encapsulation, IGMP v1, v2 and v3 snooping • 802.1p Priority Queues, port mirroring, DiffServ • DHCP support • Support upto 1024 VLANs • Support IGMP Snooping and IGMP Querying • Support Multicasting • Should support Loop protection and Loop detection, • Should support Ring protection	
8	Access Control	• Support port security • Support 802.1x (Port based network access control). • Support for MAC filtering. • Should support TACACS+ and RADIUS authentication	
9	VLAN	• Support 802.1Q Tagged VLAN and port based VLANs and Private VLAN • The switch must support dynamic VLAN Registration or equivalent • Dynamic Trunking protocol or equivalent	
10	Protocol and Traffic	• Network Time Protocol or equivalent Simple Network Time Protocol support • Switch should support traffic segmentation • Traffic classification should be based on user-definable application types: TOS, DSCP, Port based, TCP/UDP port number	
11	Management	• Switch needs to have console port for management via PC • Must have support SNMP v1,v2 and v3 • Should support 4 groups of RMON • Should have accessibility using Telnet, SSH, Console access, easier software upgrade through network using TFTP etc. Configuration management through CLI, GUI based software utility and using web interface	

8.26. Core Switch

#	Parameter	Minimum Specifications	Bidder Compliance (Yes, No)
1	Ports	• 24 or 48 (as per density required) 1G/ 10G Ethernet ports (as per internal connection requirements) • Can have FCoE ports if FCoE solution is offered • Extra 2 or higher Uplink ports (40GE) • All ports can auto-negotiate between all allowable speeds, half-duplex or full duplex and flow control for half-duplex ports.	
2	Switch type	Layer 3	
3	MAC	32k or more	
4	Backplane	Capable of providing wire-speed switching for fully populated switch	
5	Throughput	Required throughput to achieve non-blocking performance for switch when all ports are populated.	
6	Port Features	Must support Port Mirroring, Port Trunking and 802.3ad LACP Link Aggregation port trunks	
7	Flow Control	Support IEEE 802.3x flow control for full-duplex mode ports.	
8	Protocols	• IPV4, IPV6 • Support 802.1D, 802.1S, 802.1w, Rate limiting • Support 802.1X Security standards • Support 802.1Q VLAN encapsulation, IGMP v1, v2 and v3 snooping • 802.1p Priority Queues, port mirroring, DiffServ • DHCP support • Support up to 1024 VLANs • Support IGMP Snooping and IGMP Querying • Support Multicasting • Should support Loop protection and Loop detection,	
9	Access Control	• Support port security • Support 802.1x (Port based network access control). • Support for MAC filtering. • Should support TACACS+ and RADIUS authentication	
10	VLAN	• Support 802.1Q Tagged VLAN and port based VLANs and Private VLAN • The switch must support dynamic VLAN Registration or equivalent • Dynamic Trunking protocol or equivalent	
11	Protocol and Traffic	• Network Time Protocol or equivalent Simple Network Time Protocol support	

#	Parameter	Minimum Specifications	Bidder Compliance (Yes, No)
		• Switch should support traffic segmentation • Traffic classification should be based on user-definable application types: TOS, DSCP, Port based, TCP/UDP port number	
12	Management	• Switch needs to have a console port for management via a console terminal or PC • Must have support SNMP v1,v2 and v3 • Should support 4 groups of RMON • Should have accessibility using Telnet, SSH, Console access, easier software upgrade through network using TFTP etc. Configuration management through CLI, GUI based software utility and using web interface	
13	Resiliency	• Dual load-sharing power supplies • Redundant fans	

8.27. WAN / Internet Router

#	Item	Minimum Specifications	Bidder Compliance (Yes, No)
1	Multi-Services	Should deliver multiple IP services over a flexible combination of interfaces	
2	Ports	As per overall network architecture proposed by the bidder, the router should be populated with required number of LAN/WAN ports/modules, with cable for connectivity to other network elements.	
3	Interface modules	Must support up to 10G interfaces as per the design. Must have capability to connect with variety of interfaces.	
4	Protocol Support	• Must have support for TCP/IP, PPP, Frame relay and HDLC • Must support VPN • Must have support for integration of data and voice services • Routing protocols of RIP, OSPF, and BGP. • Support IPV4, IPV6 • Support load balancing	
5	Manageability	Must be SNMP manageable	
6	Traffic control	Traffic Control and Filtering features for flexible user control policies	
7	Bandwidth	Bandwidth on demand for cost effective connection performance enhancement	
8	Remote Access	Remote access features	

#	Item	Minimum Specifications	Bidder Compliance (Yes, No)
9	Redundancy	• Redundancy in terms of Power supply(s). Power supply should be able to support fully loaded chassis • All interface modules, power supplies should be hot-swappable	
10	Security features	• MD5 encryption for routing protocol • NAT ,URL based Filtering • RADIUS/AAA Authentication • Management Access policy • IPSec / Encryption • L2TP	
11	QOS Features	• RSVP • Priority Queuing • Policy based routing • Traffic shaping • Time-based QoS Policy • Bandwidth Reservation / Committed Information Rate	

8.28. Firewall

#	Item	Minimum Specifications	Bidder Compliance (Yes, No)
1	Physical attributes	• Should be mountable on 19" Rack • Modular Design • Internal redundant power supply	
2	Interfaces	• 4 x GE, upgradable to 8 GE • Console Port 1 number	
3	Performance and Availability	• Encrypted throughput: minimum 1 Gbps • Concurrent connections: up to 100,000 • Simultaneous VPN tunnels: 2000	
4	Routing Protocols	• Static Routes • RIPv1, RIPv2	

#	Item	Minimum Specifications	Bidder Compliance (Yes, No)
		• OSPF	
5	Protocols	• TCP/IP • RTP • IPSec, DES/3DES/AES • FTP, HTTP, HTTPS,SNMP, SMTP • DHCP, DNS, Support for IP v4 & IPv6 • IPSEC	
6	Other support	• 802.1Q, NAT, PAT, IP Multicast support, Remote Access VPN, Time based Access control lists, URL Filtering, support VLAN, Radius/ TACACS, Support multilayer firewall protection, Traffic shaping, Bandwidth monitoring	
7	QoS	• QoS features like traffic prioritisation, differentiated services, committed access rate. Should support for QoS features for defining the QoS policies.	
8	Management	• Console, SSHv2, Browser based configuration • SNMPv1, SNMPv2, SNMPv3	
9	Certifications	ICSA/NDPP	

8.29. Intrusion Prevention System

#	Item	Required Specifications	Bidder Compliance (Yes, No)
1	Performance	Should have an aggregate throughput of no less than 500Mbps Total Simultaneous Sessions – 500,000	
2	Features	IPS should have Dual Power Supply IPS system should be transparent to network, not default gateway to Network IPS system should have Separate interface for secure management IPS system should be able to protect Multi Segment in the network, should be able to protect 4 segments.	
3	Real Time Protection	• Web Protection	

#	Item	Required Specifications	Bidder Compliance (Yes, No)
		• Mail Server Protection • Cross Site Scripting • SNMP Vulnerability • Worms and Viruses • Brute Force Protection • SQL Injection • Backdoor and Trojans	
4	Stateful Operation	• TCP Reassembly • IP Defragmentation • Bi-directional Inspection • Forensic Data Collection • Access Lists	
5	Signature Detection	Should have provision for Real Time Updates of Signatures, IPS Should support Automatic signature synchronization from database server on web Device should have capability to define User Defined Signatures	
6	Block attacks in real time	• Drop Attack Packets • Reset Connections • Packet Logging	

#	Item	Required Specifications	Bidder Compliance (Yes, No)
		• Action per Attack	
7	Alerts	• Alerting SNMP • Log File • Syslog • E-mail	
8	Management	• SNMP v1, v2, v3 • HTTP, HTTPS • SSHv2, Console	
9	Security Maintenance	• IPS Should support 24/7 Security Update Service • IPS Should support Real Time signature update • IPS Should support Provision to add static own attack signatures • System should show real-time and History reports of Bandwidth • IPS should have provision for external bypass Switch	

8.30. Servers (As Building block, to establishing computing solution for sub-systems/solutions)

#	Parameter	Minimum Specifications	Bidders Compliance (Yes, No)
1	Processor	Latest series/ generation of 64 bit x86 processor(s) with Ten or higher Cores Processor speed should be minimum 2.4 GHz	

#	Parameter	Minimum Specifications	Bidders Compliance (Yes, No)
		Minimum 2 processors per each physical server	
2	RAM	Minimum 64 GB Memory per physical server	
3	Internal Storage	2 x 300 GB SAS (10k rpm) hot swap	
4	Network interface	2 X 20GbE LAN ports for providing Ethernet connectivity Optional: 1 X Dual-port 16Gbps FC HBA (or FCoE) for providing FC connectivity If bidder is offering FCoE based solution, corresponding ports must be present in server as well as storage controllers.	
5	RAID support	As per requirement/solution	
6	Operating System	Licensed version of 64 bit latest version of Linux/ Unix/Microsoft® Windows based Operating system)	
7	Form Factor	Blade	
8	Virtualization	Shall support Industry standard virtualization hypervisor like Hyper-V, VMWARE, Oracle VM etc. OEM of the blade chassis and servers offered should in "Validated Configuration" list and certified by OEM to run virtualization.	

8.31. Blade Chassis Specifications

#	Minimum Specifications	Bidders Compliance (Yes, No)
1	Minimum 6U size, rack-mountable, capable of accommodating minimum 8 or higher hot pluggable blades	
2	Dual network connectivity of 10 G speed for each blade server for redundancy shall be provided	
3	Backplane shall be completely passive device. If it is active, dual backplane shall be provided for redundancy.	
4	Have the capability for installing industry standard flavours of Microsoft Windows, and Enterprise RedHat Linux OS	
5	Shall support Industry standard virtualization hypervisor like Hyper-V, VMWARE, Oracle VM etc. OEM of the blade chassis and servers offered should in "Validated Configuration" list and certified by OEM to run virtualization.	
6	DVD ROM shall be available in chassis, can be internal or external, which can be shared by all the blades allowing remote installation of software	

#	Minimum Specifications	Bidders Compliance (Yes, No)
7	Minimum 1 USB port	
8	Two hot-plug/hot-swap, redundant 10 Gbps Ethernet or FCoE module with minimum 16 ports (cumulative), having Layer 2/3 functionality. If bidder is offering FCoE based solution, corresponding ports must be present in server as well as storage controller.	
9	Two hot-plugs/hot-swap redundant 16 Gbps Fiber Channel module for connectivity to the external Fiber channel Switch and ultimately to the storage device	
10	Power supplies shall have N+N. All power supplies modules shall be populated in the chassis. Required number of PDUs and power cables, to connect all blades, Chassis to Data Center power outlet.	
11	Hot pluggable/hot-swappable redundant cooling unit	
12	Provision of systems management and deployment tools to aid in blade server configuration and OS deployment	
13	Blade enclosure shall have provision to connect to display console/central console for local management such as troubleshooting, configuration, system status/health display.	
14	Single console for all blades in the enclosure, built-in KVM switch or Virtual KVM features over IP	
15	Dedicated management network port shall have separate path for remote management.	

8.32. Storage

#	Parameter	Minimum Specifications	Bidders Compliance (Yes, No)
1	Solution/ Type	• IP Based/iSCSI/FC/NFS/CIFS • If bidder is offering FCoE based solution, corresponding ports must be present in server as well as storage controller.	
2	Storage	• Storage Capacity should be minimum 50 TB (usable, after configuring in offered RAID configuration) • RAID solution offered must protect against double disc failure. • Disks should be preferably minimum of 1.2 TB capacity for SAS and 3 TB for SATA (combination as per performance and SLA requirements of overall solution) • To store all types of data (Data, Voice, Images, Video, etc) • Proposed Storage System should be scalable (vertically/horizontally)	
3	Hardware Platform	• Rack mounted form-factor	

#	Parameter	Minimum Specifications	Bidders Compliance (Yes, No)
		• Modular design to support controllers and disk drives expansion	
4	Controllers	• At least 2 Controllers in active/active mode • The controllers / Storage nodes should be upgradable seamlessly, without any disruptions / downtime to production workflow for performance, capacity enhancement and software / firmware upgrades.	
5	RAID support	• Should support various RAID Levels	
6	Cache	• Minimum 64 GB of useable cache across all controllers. If cache is provided in additional hardware for the storage solution, then cache must be over and above 64 GB.	
7	Redundancy and High Availability	• The Storage System should be able to protect the data against single point of failure with respect to hard disks, connectivity interfaces, fans and power supplies	
8	Management software	• All the necessary software (GUI Based) to configure and manage the storage space, RAID configuration, logical drives allocation, snapshots etc. are to be provided for the entire system proposed. • Licenses for the storage management software should include disc capacity/count of the complete solution and any additional disks to be plugged in in the future, upto max capacity of the existing controller/units. • A single command console for entire storage system. • Should also include storage performance monitoring and management software • Should provide the functionality of proactive monitoring of Disk drive and Storage system for all possible disk failures • Should be able to take "snapshots" of the stored data to another logical drive for backup purposes	
9	Data Protection	The storage array must have complete cache protection mechanism either by de-staging data to disk or providing complete cache data protection with battery backup for up to 4 hours	
		Secondary Storage	
1	Solution/ Type	• Secondary Storage (Archival/Backup) can be on any media such as Disks, Disk systems, etc. or its combination along with all associate software. (so as to arrive at lower cost per TB) • **Minimum 285 TB** usable as secondary storage • May or may not use de-duplication technology • Compatible with primary storage	
2	Backup Size	To store data as required, to meet the archival requirement for different type of data/information • 23 days of storage for traffic surveillance camera feeds • 83 days of storage for traffic enforcement systems • 275 days of storage for ATCS systems	
3	Hardware Platform	• Rack mounted	

#	Parameter	Minimum Specifications	Bidders Compliance (Yes, No)
		• Rack based Expansion shelves Must use latest stable technology platform, with support available for next 5 years.	
4	Software Platform	Must include backup/archive application portfolio required	
5	Retrieval Time	Retrieval time for any data stored on secondary storage should be max. 4 hours for critical data & 8 hours for other data. This would be taken into account for SLA calculation. (Critical data means any data needing urgent attention by the Judicial System or by Police Dept. for investigation / terrorist treat perception).	

Annexure II: Revised Compliance sheet for Fish Eye Camera

#	Parameters	Minimum specifications or better	Bidder Compliance (Yes, No)
1	Image Sensor	1/3.2" Progressive Scan CCD / CMOS	
2	Video Resolution	12 MP or Better	
3	Video Compression	H.264	
4	Frame rate	Minimum 10fps at 12 MP	
5	Multiple Streams	Minimum 2 individually configurable streams	
6	Lens Type	Varifocal/Fixed, IR Corrected Lens	
7	Lens	2.6mm or Better	
8	Minimum Illumination	Color: 0.5 lux, B/W: 0.01 lux (at 30 IRE)	
9	IR Illuminator	In Built/External IR illuminator of 30mtrs	
10	Day/Night Mode	Color, Mono, Auto	
11	Dynamic Range	True WDR up to 100dB	
12	S/N Ratio	≥ 50 Db	
13	Auto adjustment + Remote Control of Image settings	Color, brightness, sharpness, contrast, white balance, exposure control, backlight compensation, Auto Gain Control, Auto back focus	
14	Audio	Full duplex, line in and line out, G.711, G.726	
15	Local storage	Micro SDXC up to 64GB (Class 10) In the event of failure of connectivity to the central server the camera shall record video locally on the SD card automatically. After the connectivity is restored these recordings shall be	

#	Parameters	Minimum specifications or better	Bidder Compliance (Yes, No)
		automatically merged with the server recording such that no manual intervention is required to transfer the SD card based recordings to server.	
16	Protocol	IPV4, IPV6, HTTP, HTTPS, FTP, RTSP, RTP, TCP, UDP, RTCP, DHCP, UPnP, QoS, ONVIF profile S	
17	Security	Password Protection, IP Address filtering, User Access Log, HTTPS encryption	
18	Intelligent Video	Motion Detection & Tampering alert	
19	Alarm I/O	Minimum 1 Input & Output contact for 3rd part interface	
20	Operating conditions	0 to 50°C (temperature), 10 to 90% (humidity)	
21	Power	802.3af PoE (Class 0)/ PoE+ (IEEE 802.3at, Class 4) and 12-48VDC/24AC	
22	Casing	NEMA 4X / IP-66 rated & IK10	
23	Certification	UL/EN, CE,FCC	

Note:

1. Existing ATCS Application: CDAC Cosicost & Tra MM. The proposed ATCS system by the bidder shall be compatible & integrated with the existing application. SDK/API/All Communication & Program protocol related to hardware & software of the existing ATCS System shall be provided to the selected bidder by the SSCDL without any additional cost.
2. SSCDL will provide SDK/API required for the ATCS component with existing E-Challan platform without any additional cost. However bidder is responsible for the integration.
3. Minimum 1 hour power backup is required at each junction for all component under ITCS project.
4. Server for ITCS solutions such as Variable Messaging Sign (VMS) Server, Traffic Surveillance Cameras-Management Server, Traffic Surveillance Cameras-Recording Server, Analytics Server, ANPR Server, Traffic Analytics Server for Mid-Block VMS System, RLVD Server, Speed Detection Server, EMS Server, Mobile App Server, Database Server, ECB System Server, e-Challan Server etc., should have no single point of failover.