

Subject: Revised SOW and SOR for CCTV Supply and Installation

Request For Proposal (RFP)
For
Rate contract for
Supply, installation,
configuration of CCTV-Video Monitoring &
Surveillance System including all components like
camera, PoE / non-PoE switches, NVR, Display
Monitors, Video Management Software and all
related Licenses across GEL locations

Table of Contents

1. Company Background	5
2. Proposed Architecture	7
2.1. Current Architecture Basis	7
2.2. Recording Responsibility	7
2.3. Future Readiness	7
3. Scope of work for IP Video Surveillance / CCTV System:	8
4. Network Video Recorder (NVR) / Video Recording System.....	11
5. Camera Installation.....	13
6. Additional Bidder Considerations.....	14
7. Structured Cabling Work (OFC – 6 Core Single Mode, CAT6)	15
7.1. General Scope	15
7.2. OFC / Underground Cable Laying Best Practices	15

7.3.	Standard CAT6 Cabling Best Practices	15
7.4.	Site Visit by Bidder	16
7.5.	Installation, Termination and Documentation	16
7.6.	Compliance with Government IT Security Guidelines	16
7.7.	Installation of Active Components	17
7.8.	Operations and Maintenance.....	17
7.9.	Future Integration Support	18
7.10.	Acceptance Test.....	18
7.11.	Installation Requirements.....	19
7.12.	Software Licenses (IF APPLICABLE).....	19
8.	Technical specifications	19
8.1.	2MP Dome Camera	19
8.2.	2MP Bullet Camera	21
8.3.	2MP PTZ Camera 30X.....	22
8.4.	5MP Dome Camera	25
8.5.	5MP Bullet Camera	26
8.6.	5MP Long Range Bullet Camera	28
8.7.	5MP PTZ Camera 30X.....	30
8.8.	2MP Motorized ANPR / LPR Bullet Camera	32
8.9.	IR Illuminator.....	35
8.10.	Joystick.....	35
8.11.	16-port Indoor PoE switch with SFP.....	35
8.12.	8 Ch Embedded Network Video Recorder with 2 SATA Interfaces	37
8.13.	24 Port CAT 6 Patch Panel.....	38

8.14.	16 Channel NVR.....	39
8.15.	32 Channel NVR with 8 SATA Interface	41
8.16.	64 Channel NVR with 8 SATA Interface	42
8.17.	VMS for Monitoring	43
8.18.	8-port Indoor PoE switch with SFP	45
8.19.	16-port PoE switch with SFP	46
8.20.	24 Port Network Layer 2 Switch.....	48
8.21.	1 KVA UPS ONLINE UPS, Single Phase Input, Single Phase output and 30 Min. Battery Backup	49
8.22.	9 U Outdoor Rack including required accessories, power strip and dressing. (Networking/Server Rack).....	50
8.23.	Pole for Camera Mounting (If required)	50
8.24.	32 MM HDPE Pipe	51
8.25.	50 MM HDPE Pipe	52
8.26.	Power Cable	52
8.27.	CAT 6 UTP Cable	52
8.28.	Cat 6 UTP Patch Cord – LSZH- 1 Mtr & 2 Mtr.....	53
8.29.	CAT6 Information Outlet and Face Plate	53
8.30.	PVC Pipe - Plain Conduits of Insulating Materials.....	54
8.31.	Network Cable Laying (Laying & Installation Charges for Cables (with or without conduit)	54
8.32.	Laying & Installation Charges for PVC Pipe (with or without conduit).....	54
8.33.	HDPE Pipe Laying on Wall and Underground (Soft soil and Hard Soil, digging) (in meter)	55
8.34.	Health Management Software	55
9.	Terms and conditions.....	55

10.	Delivery	56
11.	Project Implementations.....	56
12.	Service Level Agreement	57
13.	Penalty Terms:.....	59
14.	Payment Terms	62
15.	Defect Liability: Not Applicable.....	63
16.	CPBG: Applicable as per GEL terms and condition.....	63
17.	QHSE REQUIREMENTS	63
18.	SCHEDULE OF RATES	66

1. Company Background

Gujarat Energy Limited (erstwhile Gujarat Gas Limited) is an integrated energy company pursuant to Composite Scheme of Amalgamation & Arrangement involving GSPC Group of Companies which came to be finally approved by the Ministry of Corporate Affairs, Government of India in April 2026.

Gujarat Energy Limited ("GEL") encompasses and excels at an entire range of energy value chain as follows:

- GEL continues to be India's Largest City Gas Distribution ("CGD") Company in terms of volume operating in 44 districts spread across 6 states in India i.e., Gujarat, Maharashtra, Rajasthan, Haryana, Punjab & Madhya Pradesh and 1 Union territory of Dadra & Nagar Haveli. GEL continues to hold the leadership position in CGD industry in terms of size and scale of operation. GEL has a successful track record of providing uninterrupted services for over 3 decades through a network of more than 44,540 KMs. of Natural Gas pipeline, distributing approx. 8.37 MMSCMD of Natural Gas in Q3 of FY 2025-26. GEL operates over 834 CNG stations and has connected more than 23.83 lakh households, over 15,900 commercial customers and more than 4,454 industrial customers.
- GEL is also one of the leading Gas Trading Companies in India. During FY 25-26, we have procured a total of 30 LNG Cargos from various international suppliers. During FY 25-26, natural gas trading

volume stood at approx. 10.3 MMSCMD making us one of the largest gas trading companies in India. Our diverse and robust natural gas procurement portfolio serves the demand of a range of customers in strategically important segments such as fertilizers, power, petrochemicals and other large industries apart from complementing our own captive demand towards our CGD Business.

- GEL also holds participating interest in 12 operational Exploration & Production ("E&P") Blocks in India of which 11 are located within the Cambay Basin in Gujarat while 1 E&P Block is located in the Krishna Godavari Basis off the east coast of India. GEL is the Operator of 6 E&P Blocks located within the Cambay Basin in Gujarat. From the 12 E&P Blocks put together, we along with our Joint Venture Partners have achieved aggregate cumulative production of 48 Billion Cubic Feet of natural gas, 7.58 Million Barrels of Oil and 0.2 Million Barrels of Condensate as of March 2026.

2. Proposed Architecture

2.1. Current Architecture Basis

The bidder shall design, supply, install, test, commission and maintain the CCTV system strictly based on the following current approved architecture:

1. All cameras at each gas station / field location shall be connected to local access/network switches and local NVR(s).
2. Primary recording shall be done locally at the respective site NVR.
3. Minimum video retention shall be available locally at the site NVR for 30 days or as otherwise specified in the item technical specification.
4. Central location shall be used only for centralized live viewing, remote playback, event review, health monitoring, and download/export of video clips from remote NVRs using OEM-provided CMS / viewing software.
5. Bidder shall not be required to undertake any work pertaining to the centralized recording of video feeds, procurement of enterprise VMS licenses, data centre, disaster recovery, etc. as part of the scope of work under this RFP.
6. Any future integration with ICCC, DC, DR, centralized enterprise VMS or analytics platform shall be treated as a future phase and is not part of the current scope unless specifically mentioned as an optional/future-ready provision.
7. The bidder shall quote strictly against this approved architecture only.

2.2. Recording Responsibility

- Primary recording responsibility Local site NVR
- Playback source for routine investigations: Remote site NVR through OEM CMS
- Export/download source: Remote site NVR through OEM CMS
- Central storage purpose at current stage: Only for manual export / evidence retention if required, not for primary or continuous recording
- Failover recording at current stage: Camera edge recording on SD card, if enabled and supported
- Centralized failover recording server: Not in current scope

2.3. Future Readiness

The proposed solution should be based on standard IP video surveillance design principles and should support future migration/integration with higher-level monitoring systems. However, such future readiness shall not be used to impose current-scope requirements for enterprise VMS servers, centralized recording servers, centralized storage arrays, or ICCC/DC infrastructure under this tender.

The proposed system shall be capable of future integration with DC, ICCC, Enterprise VMS, centralized monitoring platforms, analytics platforms, and other related systems, as and when required by GEL. The successful bidder shall ensure that the currently installed system is integration-ready and shall provide necessary technical and coordination support for such future integration. However, any additional hardware, software, licenses, or infrastructure required exclusively for the future setup shall be dealt with separately unless specifically included in the present scope.

3. Scope of work for IP Video Surveillance / CCTV System:

The scope of complete work shall include design, engineering, supply, installation, testing, commissioning, integration, site acceptance testing, documentation, warranty and maintenance of the IP-based video surveillance system for gas station / field locations.

The bidder shall provide all equipment, software, accessories, passive materials, licenses, mounting hardware, interconnections, cables, conduits, power accessories, protection components, and services required for a complete and operational system.

The scope shall include, but not be limited to, the following:

1. Conducting site survey and assessment of all identified locations and carrying out detailed assessment including preparation of the bill of materials (BOM).
2. Supply, installation, testing and commissioning of IP cameras, ANPR cameras, PTZ cameras where required, industrial-grade SD card in cameras wherever specified.
3. NVRs, switches, racks, UPS, workstation, displays, accessories and associated cabling.
4. Supply and installation of OEM-provided centralized CMS/viewing software on the designated server-grade workstation at central location.
5. Configuration of local recording at each site NVR.
6. Configuration of remote live view and remote playback from central location over WAN/VPN.
7. Configuration of user roles, passwords, camera naming, recording parameters, time synchronization, and event settings.
8. Integration of ANPR cameras with LPU for site entry/exit vehicle capture.
9. Testing of all cameras for coverage, scene quality, day/night performance, recording, playback and export.
10. Submission of design drawings, IP addressing scheme, recording calculations, storage calculations, cable route drawings and as-built drawings.
11. All equipment shall be protected through appropriate UPS, surge protection, earthing, and power conditioning measures as required under the project scope.
12. All connecting cables used in the field shall be suitable for the application and environment, including outdoor-rated / industrial-grade cable where required.

13. Any software, hardware, license, accessory, integration item, passive component, consumable, or service not specifically mentioned in the RFP but required for complete SITC and successful operation of the proposed system shall be deemed to be included in the bidder's scope. The bidder shall explicitly mention such items in the solution document and include the corresponding cost in the bid. No extra item, additional cost, or additional payment shall be considered later on this account.
14. The successful bidder shall be fully responsible for preparation and submission of detailed site survey documents and final as-built drawings for each location in AutoCAD editable format and PDF format. These drawings shall include, but shall not be limited to, camera points, camera numbering, mounting arrangement, field of view, blind spots if any, junction points, cable routes, conduit routes, wiring diagrams, network connectivity diagrams, switch connectivity, NVR connectivity, rack layout, power distribution, UPS connectivity, earthing arrangement, and all associated infrastructure installed under this project.
15. The drawings shall be updated as per actual installation and shall represent the final executed condition of the site. These documents shall be submitted as part of commissioning, handover, and final acceptance. The cost of preparing and submitting such drawings/documents shall be deemed included in the bid and no additional payment shall be made on this account.
16. All software licenses, device licenses, client/viewing licenses, feature licenses, recording licenses, analytics licenses, ANPR/LPU licenses, operating system licenses, database licenses, and any other applicable licenses procured, supplied, activated, or deployed under this project shall be in the name of Gujarat Energy Limited (GEL) only. The successful bidder shall be responsible for procurement, activation, registration, documentation, and handover of all such licenses in the name of GEL. Proper proof of license entitlement, activation details, license keys, and OEM supporting documents shall be submitted during commissioning and handover. No additional payment shall be made later on account of any omitted license required for complete operation of the system.
17. The successful bidder shall provide all required electrical protection and internal power distribution items, including SPDs, MCBs, power cables, power strips, sockets, connectors, earthing materials, and related accessories, for safe and reliable operation of the system at all field and central locations. The bidder shall clearly specify the power requirement and protection arrangement in the solution document. Raw power/electricity at the designated location may be provided by GEL however all internal electrification, last-mile power extension, and protection arrangements shall be deemed included in the bidder's scope and quoted price, and no separate payment shall be made on this account.
18. Training of client personnel for operation of NVR, CMS software, playback, export and first-level troubleshooting.

19. 5-Years of Comprehensive onsite Warranty and maintenance support during the contract period.

4. Network Video Recorder (NVR) / Video Recording System

- The proposed NVR / video recording system shall provide a complete site-level recording solution for the security surveillance application at each gas station / project location.
- All cameras installed at a site shall be connected to the local network and configured to record primarily on the respective local NVR.
- The central monitoring location shall allow authorized operators to view live video and access recorded video from remote site NVRs over the IP network using the OEM-provided CMS / viewing software.
- The recording system should support viewing of multiple camera feeds in a single screen as well as single-camera full-screen view, based on user selection.
- The monitoring software/display system shall support multi-screen layouts and shall be capable of displaying up to 32 camera feeds simultaneously, or as supported by the offered OEM software and workstation configuration.
- Auto-sequencing / tour view shall be supported for rotation of selected camera feeds.
- Detailed equipment-wise technical specifications are provided separately under the technical specification section of this RFP.
- The NVR and cameras shall be configured to ensure minimum 30 days recording retention at each site, based on actual camera count, resolution, frame rate, compression, recording mode, and audio requirements, wherever applicable.
- Recording shall be configured in such a way that when storage reaches maximum capacity, overwrite shall take place automatically on a first-in-first-out basis without manual intervention.
- Cameras shall be configured to record on the local NVR on a 24x7 basis or as per approved recording policy.
- The bidder shall ensure that the proposed NVR storage sizing is adequate for the required retention period. If additional HDD/storage is required to meet the retention requirement, the same shall be provided by the bidder without extra cost.
- At remote/site level, each location may have a local monitor/display, wherever applicable, for local viewing and operational use.
- Local NVR access shall be restricted through privileged user accounts with role-based access for video monitoring, playback, administration, and emergency video retrieval.
- Centralized monitoring and management of remote site cameras and NVRs shall be possible from the designated central monitoring location through OEM CMS / viewing software installed on the server-grade workstation.
- Authorized users shall be able to access live view, remote playback, snapshot capture, clip export, and device status from the central monitoring location, subject to available bandwidth and system permissions
- The offered camera and NVR solution shall support edge recording on camera SD card during temporary network failure, link disruption, or NVR unreachability. Upon restoration of connectivity, the system shall automatically synchronize/backfill the missed video data from the camera SD card to the NVR from the exact point of interruption, thereby ensuring continuity and seamless availability of recorded footage without manual intervention.
- The bidder shall size the NVR and HDD storage based on recording at the offered camera's full resolution and a minimum 25 fps for standard surveillance cameras, unless otherwise specifically approved by GEL. ANPR/LPR cameras shall be sized based on the OEM-recommended operational frame rate required for reliable plate capture. Under no circumstance shall sub-

stream, reduced frame rate, or reduced recording resolution be assumed for storage sizing unless explicitly approved by GEL in writing.

5. Camera Installation

- During installation, the camera lens position and angle shall be adjusted to obtain the required field of view and scene coverage for the specific location.
- The bidder shall ensure that each camera is positioned to meet the surveillance objective of that point, including entry/exit, forecourt, dispenser area, canopy, cash handling zone, storage yard, parking, and peripheral areas, as applicable.
- Cameras shall be configured with suitable IP addresses in accordance with the approved IP addressing scheme.
- Camera names/IDs shall be configured in such a way that live and recorded feeds can be easily identified.
- Cameras shall be configured for automatic day/night operation without manual intervention.
- Alerts/events shall be configured in the camera/NVR/software, as applicable, based on the approved solution design and supported OEM functionality.
- All hardware supplied shall be industrial-grade / commercial-duty and suitable for continuous operation in the intended environment.
- All monitors/displays supplied shall be commercial-grade and suitable for intended duty cycle.
- Data communication between cameras, NVRs, and central monitoring station shall be secured using standard authentication and encryption mechanisms supported by the offered system.
- ANPR/LPR cameras shall be installed only at approved vehicle entry/exit points or other specifically identified vehicle capture locations.
- The bidder shall be fully responsible for designing the ANPR capture point considering lane width, vehicle approach angle, capture distance, mounting height, mounting offset, focal length, lighting condition, headlight glare, night visibility, and expected vehicle speed.
- The ANPR camera shall be positioned in such a manner that the number plate of intended vehicles is clearly captured under day and night conditions for the defined lane coverage.
- Where required, the bidder shall provide suitable brackets, poles, cantilever arms, housings, illuminators, and protection accessories for proper ANPR deployment.
- The bidder shall ensure that the camera angle, zoom, shutter speed, WDR, exposure, IR/illuminator performance, and image profile are tuned specifically for number plate readability and not merely for general scene viewing.
- If the offered ANPR architecture requires LPU / local processing unit, the bidder shall supply, install, configure, test, and commission the LPU at the respective site or designated location as per OEM-recommended architecture.
- The LPU shall be integrated with the ANPR camera and shall process, store, and manage number plate recognition events along with associated metadata such as site name, camera ID, lane ID where applicable, date, time, and captured vehicle image.
- The bidder shall provide all required licenses, application software, database components, operating system components, and accessories required for ANPR/LPU functioning under the current scope.
- The bidder shall ensure that the ANPR/LPU system supports authorized local review of captured number plate records, event logs, and associated images/video clips at site level wherever applicable under the offered architecture.
- At the central monitoring location, authorized GEL users shall be able to access ANPR data of remote sites through the offered system architecture, either through OEM CMS, OEM ANPR client software, web client, or other secure approved application, depending on the OEM solution.

- The central access shall enable, at minimum, viewing/searching of number plate records by site, camera, date/time range, and plate number or partial plate number, subject to OEM feature availability.
- The central system shall also allow authorized users to review associated snapshots and, wherever supported, linked video clips or playback references corresponding to the number plate event.
- Where the OEM ANPR architecture does not natively provide full central consolidated database access under current scope, the bidder shall clearly declare the actual offered workflow for remote ANPR data access, review, and export by GEL.
- The bidder shall configure secure communication between site ANPR/LPU system and central monitoring location for authorized access to ANPR data, subject to available network connectivity and approved cybersecurity provisions.
- The bidder shall demonstrate during commissioning that number plate data generated at site is retrievable by authorized GEL users at the central location in the approved manner.
- The bidder shall submit complete ANPR/LPU architecture diagram, data flow, user workflow, storage method, search method, and export/reporting method as part of design and handover documentation.
- If ANPR events are stored locally at site and synchronized centrally, the bidder shall clearly specify synchronization method, dependency on connectivity, retention of ANPR event database, and any limitations.
- The bidder shall train GEL users on ANPR event search, record review, data export, and troubleshooting workflow at both local and central level.

6. Additional Bidder Considerations

Over and above the above scope, the bidder shall consider the following while offering products and services as part of the bid:

- All products shall be supplied with 5 years of comprehensive onsite warranty.
- Time for replacement of defective product during warranty period shall be 72 hours for HO / District / critical locations and 150 hours for remote locations, unless otherwise specified by GEL.
- Cameras shall be supplied with suitable mounting accessories, brackets, junction boxes, clamps, and all required fittings.
- Cameras shall be supplied with 128 GB SD card from day 1 wherever specified.
- NVR shall be supplied with the required HDD capacity to meet retention requirement. The indicative HDD capacities given in the RFP are minimum/reference values only.
- Each NVR and associated hardware shall have adequate throughput for smooth recording, live view, playback, and remote access.
- All cameras and NVRs shall be ONVIF compliant per specified profiles, wherever applicable.
- Bidder shall carry out asphalt cutting, boring, RCC cutting, plaster cutting, trenching, reinstatement, and related civil works as per site requirement.
- Bidder shall also consider necessary electrification as per site requirement. Power from nearest electrical point up to rack/equipment shall be in bidder scope unless specifically excluded.
- Dismantling and reinstallation activities, if required during contract period, shall be undertaken at the finalized rates under the RFP, where such provision exists.

7. Structured Cabling Work (OFC – 6 Core Single Mode, CAT6)

7.1. General Scope

The bidder shall be responsible for laying required LAN and OFC cabling along with all associated accessories such as PVC conduit, HDPE pipe, GI pipe, LIU, pigtails, patch cords, clamps, supports, tags, casing/capping, protection arrangements, and reinstatement of the site to original condition. The bidder shall follow industry best practices of structured cabling including proper laying, dressing, tagging, clamping, casing, capping, testing, and documentation.

7.2. OFC / Underground Cable Laying Best Practices

- Fiber cable, wherever required under the scope, shall be laid as per approved design and site feasibility.
- Underground cable laying shall be carried out in accordance with applicable standards and approved site conditions.
- All underground cable trenches shall be excavated, laid, backfilled, compacted, protected, and restored properly back to its original state.
- All cables shall be weatherproof, outdoor-grade, and compliant with relevant industry standards.
- Bidder shall submit supporting documents/test certificates for cables and passive components along with the bid/approval documents, as applicable.
- Backfilling and removal of excess earth/debris shall be in bidder scope.

7.3. Standard CAT6 Cabling Best Practices

- Cabling shall be done using branded CAT6 cable, 100 ohm, 4-pair UTP, or better, as specified.
- Uplink between locations/floors/blocks shall preferably be on fiber. CAT6 may be used only within permissible distance limits and as per approved design.
- All nodes shall be connected through proper I/O, patch panel, and rack arrangement wherever applicable.
- Cable tagging shall be done at both ends and shall match the documentation.
- Cables shall be installed without overstretching, crushing, kinking, or sharp bending.
- All cables passing through walls, floors, or metal surfaces shall be protected using sleeves, grommets, conduits, or other suitable protection means.
- All vertical and horizontal cable runs shall be routed neatly, safely, and in an adequately supported manner through approved cable management infrastructure such as cable tray, box cable tray, conduit, casing-capping, or other approved protection system, as applicable. Cables shall be properly dressed, clamped, and supported to avoid excess strain, sagging, mechanical damage, or unsafe resting on foreign surfaces.
- Free access for maintenance and future routing shall be considered wherever feasible.

- Detailed floor plans and cable layouts shall be submitted in hard copy and soft copy as part of documentation.

7.4.Site Visit by Bidder

- For better understanding of site conditions, the bidder may visit the site(s) with prior written permission from GEL before submission of the bid.
- The bidder shall carry out its own assessment, measurements, route study, mounting feasibility check, and installation planning for finalization of scope before submission of bid.
- No claim on account of lack of site understanding shall be entertained later.

7.5.Installation, Termination and Documentation

- Installation, termination, testing, labeling, and identification of all wiring/cabling between field devices, network points, racks, and equipment room shall be in bidder scope.
- The successful bidder shall furnish working drawings, solution design drawings, and final as-built drawings, which shall form an essential part of commissioning and handover.
- The bidder shall submit detailed site survey and as-built drawings in AutoCAD editable format and PDF format for each site.
- The drawings shall clearly show camera locations, camera IDs, mounting details, field of view, junction points/boxes, cable routes, conduit routes, wiring diagrams, network topology, switch locations, NVR locations, rack layout, UPS locations, power points, earthing points, and other relevant installation details.
- The submitted as-built documents shall reflect the actual executed condition of the site.
- No extra payment shall be made for preparation, submission, revision, or handover of such drawings and documentation.
- Passive components of the structured cabling distribution network shall be free from manufacturing defects in material and workmanship under normal and proper use.

7.6.Compliance with Government IT Security Guidelines

- The bidder shall ensure that all hardware, software, firmware, network components, storage, and associated systems supplied under this project comply with applicable Government of India cybersecurity and information security requirements, including the Information Technology Act, 2000, IEC 62443 and amendments thereof, and relevant guidelines/advisories issued by CERT-In, MeitY, STQC/ER, BIS, and other competent authorities, wherever applicable. The offered equipment shall also meet applicable electrical safety, EMC, environmental, and product safety standards suitable for gas station / field deployment. The bidder shall submit relevant OEM declarations, test certificates, and compliance documents whenever required by GEL.
- Any periodic changes in such guidelines during the project duration, to the extent applicable to the supplied system under contract, shall be complied .

7.7. Installation of Active Components

- The bidder shall be responsible for supply, installation, testing, commissioning, integration, and making operational all active components required for successful running of the surveillance system.
- Required active components shall be installed at the identified surveillance locations.
- Cameras shall be connected to the switches and NVRs as per approved design.
- Bidder shall install UPS along with necessary electrification, power protection, and interconnection to all required devices under this RFP.
- All installation work shall be carried out in a neat, safe, and professional manner.
- Any associated accessories, interface devices, adapters, mounting items, protection devices, software utilities, or configuration items required for complete SITC of the proposed system shall be deemed included in bidder scope, whether or not specifically listed in the BOQ/RFP, and no extra payment shall be made on this account.
- Any specialized room/display/AV works shall be executed only if specifically included in scope and approved by GEL.
- The successful bidder shall pull, lay, route, terminate, test, label, and commission all necessary cables up to the required locations using approved conduit, casing, piping, channel, OFC, CAT6, patch cords, and associated accessories as per approved design.
- All installation work shall be executed using good engineering practices and in compliance with applicable standards.
- The bidder shall ensure proper protection, identification, routing, and finishing of all installed cables and accessories.
- The bidder shall restore all disturbed surfaces/areas to original condition after completion of installation work.

7.8. Operations and Maintenance

The bidder shall be responsible for providing required maintenance, service, onsite support, and OEM-backed support for the entire contract duration from the date of successful commissioning / acceptance.

The scope shall include:

The scope of O&M shall include mandatory quarterly preventive maintenance at all commissioned sites after go-live, corrective maintenance on complaint basis, replacement of defective parts/equipment without additional cost, maintaining required spares, coordination with OEM for support, restoration of services within applicable SLA timelines, and support for software, firmware, and configuration issues. In addition, whenever any fault/complaint is raised by GEL, the bidder shall deploy service personnel to the respective site as required and shall investigate, rectify, and restore the system within the prescribed SLA timelines.

- The bidder shall carry out preventive maintenance at least once in a quarter, or as otherwise specified by GEL.
- Preventive maintenance shall include inspection, cleaning, dusting, tightening, health check, realignment of cameras if required, verification of recording, checking of storage, checking of network and power components, configuration backup, firmware/software updates as applicable, and general upkeep of the system.

- The bidder shall submit preventive maintenance schedule to GEL from time to time.
- After each preventive maintenance cycle, the bidder shall submit a detailed preventive maintenance report.
- Preventive maintenance shall preferably be carried out during non-working hours or on holidays so as to minimize operational disruption.

The defective part replaced shall remain the property/responsibility of the bidder unless otherwise directed by GEL.

The bidder shall maintain adequate spares at site or at its own support location to meet SLA requirements.

The bidder shall transfer operational knowledge to GEL or its nominated technical team. All networking equipment, electrical accessories, power backup-related accessories, plugs, wires, and connected items supplied under the project shall be maintained in good working condition and repaired/replaced by the bidder as required under the contract.

The successful bidder shall maintain an up-to-date inventory of all supported equipment, serial numbers, locations, warranty details, and spares, and shall make the same available for review whenever required.

7.9.Future Integration Support

The bidder shall ensure that the installed cameras, NVRs, software, and associated components are future-ready and capable of integration with future DC / DR / ICCV / Enterprise VMS / centralized monitoring or analytics platforms. As and when required by GEL during the contract period, the successful bidder shall provide necessary technical support, OEM coordination support, documentation, and integration assistance for such future integration. However, any new hardware, software, server, storage, license, or third-party infrastructure exclusively required for such future setup shall be treated as separate scope unless included in the present contract.

7.10. Acceptance Test

Acceptance test shall be conducted as follows:

- GEL / user department reserves the right to inspect the supplied equipment, materials, cables, installation quality, and workmanship.
- The cost of all such tests/inspections shall be borne by the successful bidder.
- Any goods/material/equipment found non-conforming to the contract specification may be rejected and shall be replaced by the successful bidder without any financial implication to GEL.

- Sample approval / material approval shall be obtained before installation wherever required by GEL.
- The first stage shall involve successful installation of the system/site(s). Provisional acceptance, if adopted, may be treated as partial acceptance.
- Final Acceptance Test shall be conducted after successful installation, integration, configuration, and demonstration of the system in accordance with the RFP requirements.
- Upon successful completion of acceptance test, acceptance certificate shall be issued by GEL to the successful bidder.
- The date of issuance of acceptance certificate shall be treated as the date of successful commissioning of the system.
- Any delay attributable to the bidder in completion of testing/acceptance may attract applicable penalties as per contract conditions.

7.11. Installation Requirements

Multiple layer Monitoring and Video management system

- Local 24/7 monitoring at remote location of all cameras.
- Second level monitoring at Regional office of respective geographical area.
- Third level monitoring at state level for all locations.
- All live video monitoring over wan will be optimized based on available bandwidth.

7.12. Software Licenses (IF APPLICABLE)

The bidder shall be responsible for providing Software (System Software, Application Software, Device Drivers, IOS, etc.) required, if any, to meet any additional requirements during the currency of the Agreement without any additional cost to GEL. All license software must be in the name of GEL/user department, Govt. of Gujarat. The ownership of any involved customize software will be of the GEL/user department, Govt. of Gujarat

8. Technical specifications

8.1.2MP Dome Camera

Sr. No.	Specification Name	Bid Requirement
1	Camera Type	Fixed Dome IP Camera
2	Application	Indoor / protected area surveillance
3	Image Sensor Type	Progressive Scan CMOS Sensor
4	Image Sensor Size	1/2.8" or better
5	Camera Resolution	Minimum 2MP
6	Supported Resolution	Full HD (1920 × 1080) and HD (1280 × 720) or better
7	Day / Night Capability	Yes

Sr. No.	Specification Name	Bid Requirement
8	IR Illumination Range	Minimum 30 m
9	Lens Type	Fixed Lens
10	Focal Length	Suitable fixed focal length for intended indoor surveillance application
11	Frame Rate	Minimum 25 fps at full resolution
12	Video Compression	H.265, H.265+, and H.264
13	OEM H.265 Compliance	Camera OEM shall be a genuine manufacturer and a valid H.265 / HEVC licensee at the time of bid submission
14	Video Streaming	Minimum triple stream with independent stream configuration for resolution, frame rate, and quality
15	Stream Profile Requirement	Minimum main stream at 1080p and sub-stream at 720p or better
16	Audio Support	Built-in microphone support, Two-way audio support required
17	Alarm Support	Yes
18	Alarm I/O	Minimum 1 alarm input and 1 alarm output, if available in offered model
19	Pre / Post Alarm Buffer	Supported
20	Minimum Illumination	0.005 lux @ F1.6 or better for color image, or better OEM standard
21	WDR	True WDR 120 dB or better
22	SNR	50 dB or better
23	Edge Storage and Synchronization	Camera shall support microSD card based edge storage and shall be supplied with minimum 128 GB SD card from day 1, of SDXC Class 10 or higher. In case of temporary NVR/network failure, camera shall automatically record on local SD card and, upon restoration of connectivity, shall support automatic synchronization / backfill to NVR without manual intervention, wherever supported by the offered OEM camera-NVR ecosystem.
24	Network Protocols	IPv4, IPv6, ICMP, TCP, UDP, DHCP, RTP, RTSP, RTCP, DNS, DDNS, NTP, HTTP, HTTPS, SMTP, 802.1x, SNMP, Multicast, SSL/TLS, ONVIF Profile S/G/T
25	Housing Material	Metal / Aluminum / High-quality OEM standard housing
26	Protection Rating	Minimum IK10; IP rating as applicable for installed indoor/protected environment
27	Mounting	Wall / Ceiling Mount suitable
28	Power Input	POE /POE+ to follow IEEE 802.3 af /at or better
29	ONVIF Support	Yes, ONVIF Profile S, G, T
30	Compliance and Certification	Availability of security testing report for CCTV/VSS issued by Standardization Testing and Quality certification (STQC) Laboratory or any other agency notified by Meity. BIS Registration (CRS) for safety general requirements as per IS 13252 (Part 1):latest.
31	Cyber Security	Camera shall support secure access and cybersecurity features such as HTTPS, 802.1x, TLS, secure authentication, signed firmware / secure boot / TPM / chipset security / OEM cybersecurity certification / equivalent security compliance as supported by the offered product
32	OEM Undertaking	OEM shall provide undertaking for: (i) no support/use of GB/T 28181 protocol, if required by GEL; (ii) NDAA compliance, if required under tender conditions; (iii) MAC IDs of supplied cameras belonging to OEM; (iv) OEM being ONVIF member and quoted model being listed on ONVIF website
33	Warranty	5 Years Comprehensive Onsite Warranty

8.2.2MP Bullet Camera

Sr. No.	Specification Name	Bid Requirement
1	Camera Type	Fixed Bullet IP Camera
2	Application	Outdoor surveillance / directional field coverage
3	Image Sensor Type	Progressive Scan CMOS Sensor
4	Image Sensor Size	1/2.8" or better
5	Camera Resolution	Minimum 2MP
6	Supported Resolution	Full HD (1920 × 1080) and HD (1280 × 720) or better
7	Day / Night Capability	Yes
8	IR Illumination Range	Minimum 50 m or better
9	Lens Type	Motorized Varifocal Lens
10	Focal Length	3.0 mm to 11.0 mm or better
11	Frame Rate	Minimum 25 fps at full resolution
12	Video Compression	H.265 / H.265+ / equivalent smart codec optimization, and H.264
13	OEM H.265 Compliance	Camera OEM shall be a genuine manufacturer and a valid H.265 / HEVC licensee at the time of bid submission
14	Video Streaming	Minimum triple stream with independent stream configuration for resolution, frame rate and quality
15	Stream Profile Requirement	Minimum main stream at 1080p and sub-stream at 720p or better
16	Audio Support	Built-in or external microphone support, with two-way audio support,
17	Alarm Support	Yes
18	Alarm I/O	Minimum 1 alarm input and 1 alarm output, if available in offered model
19	Pre / Post Alarm Buffer	Supported
20	Minimum Illumination	0.005 lux @ F1.6 or better for color image, or better OEM standard
21	WDR	True WDR 120 dB or better
22	SNR	50 dB or better

Sr. No.	Specification Name	Bid Requirement
23	Edge Storage and Synchronization	Camera shall support microSD card based edge storage and shall be supplied with minimum 128 GB SD card from day 1, of SDXC Class 10 or higher. In case of temporary NVR/network failure, camera shall automatically record on local SD card and, upon restoration of connectivity, shall support automatic synchronization / backfill to NVR without manual intervention, wherever supported by the offered OEM camera-NVR ecosystem.
24	Network Protocols	IPv4, IPv6, ICMP, TCP, UDP, DHCP, PPPoE, RTP, RTSP, RTCP, DNS, DDNS, NTP, FTP, UPnP, HTTP, HTTPS, SMTP, 802.1x, SNMP
25	Installation Type	Outdoor
26	Housing Material	Aluminum / Metal / High-quality OEM standard housing
27	Protection Rating	Minimum IP67, IK10 and NEMA-4X rated housing
28	Mounting	Wall Mounted with required bracket and accessories
29	Power Input	POE /POE+ to follow IEEE 802.3 af /at or better
30	ONVIF Support	Yes, ONVIF Profile S, G, T
31	Compliance and Certification	Availability of security testing report for CCTV/VSS issued by Standardization Testing and Quality certification (STQC) Laboratory or any other agency notified by Meity. BIS Registration (CRS) for safety general requirements as per IS 13252 (Part 1):latest.
32	Cyber Security	Camera shall support secure access and cybersecurity features such as HTTPS, 802.1x, TLS, secure authentication, signed firmware / secure boot / TPM / chipset security / OEM cybersecurity certification / equivalent security compliance as
33	OEM Undertaking	OEM shall provide undertaking for: (i) no support/use of GB/T 28181 protocol, if required by GEL; (ii) NDAA compliance, if required under tender conditions; (iii) MAC IDs of supplied cameras belonging to OEM; (iv) OEM being ONVIF member and quoted model being listed on ONVIF website
34	Warranty	5 Years Comprehensive Onsite Warranty

8.3.2MP PTZ Camera 30X

Sr. No.	Specification Name	Bid Requirement
1	Camera Type	PTZ IP Camera

Sr. No.	Specification Name	Bid Requirement
2	Application	Outdoor surveillance, large area monitoring, long-range verification, perimeter watch, open yard observation, and incident-based operator control
3	Image Sensor Type	Progressive Scan CMOS Sensor
4	Image Sensor Size	1/2.8" or better
5	Camera Resolution	Minimum 2MP
6	Supported Resolution	Full HD (1920 × 1080) and HD (1280 × 720) or better
7	Day / Night Capability	Yes
8	Minimum Illumination	Color: 0.005 lux @ F1.6 or better; B/W: 0 lux with IR ON
9	Scanning System	Progressive
10	SNR	55 dB or better
11	IR Illumination Range	Minimum 200 m or better
12	IR Control	Automatic IR intensity adjustment with auto IR ON/OFF control
13	WDR	True WDR 120 dB or better
14	Optical Zoom	Minimum 30X optical zoom
15	Focal Length	4.3 mm to 129 mm or equivalent range meeting minimum 30X optical zoom requirement; ±25% variation acceptable
16	Focus Control	Auto / Manual
17	Video Compression	H.265 / H.265+ and equivalent smart codec optimization, and H.264
18	OEM H.265 Compliance	Camera OEM shall be a genuine manufacturer and a valid H.265 / HEVC licensee at the time of bid submission
19	Video Streaming	Minimum triple stream with independent stream configuration for resolution, frame rate, and quality
20	Stream Profile Requirement	Camera shall support minimum two streams at 2MP or better
21	Frame Rate	Minimum 25 fps at 1920 × 1080 resolution
22	Day/Night / Image Controls	Automatic day/night switching, with color/mono mode selection, auto/manual white balance, and 2D/3D noise reduction
23	Video Functions	Motion detection and region of interest support required
24	Ethernet	RJ-45, 10/100 Base-T or better
25	Audio / Alarm Support	Camera shall support audio, minimum 1 alarm input and 1 alarm output for third-party interface, wherever supported in the offered model

Sr. No.	Specification Name	Bid Requirement
26	Network Protocols	IPv4, IPv6, ICMP, TCP, UDP, DHCP, PPPoE, RTP, RTSP, RTCP, DNS, DDNS, NTP, FTP, UPnP, HTTP, HTTPS, SMTP, 802.1x, SNMP, Multicast, SSL/TLS, ONVIF Profile S/G/T
27	Streaming Method	Unicast / Multicast
28	Edge Storage and Synchronization	Camera shall support microSD card based edge storage and shall be supplied with minimum 128 GB SD card from day 1, of SDXC Class 10 or higher. In case of temporary NVR/network failure, camera shall automatically record on local SD card and, upon restoration of connectivity, shall support automatic synchronization / backfill to NVR without manual intervention, wherever supported by the offered OEM camera-NVR ecosystem.
29	PTZ Performance	Pan: 360° endless/continuous; Tilt: suitable PTZ tilt range with auto flip; manual and auto pan/tilt speed control; minimum 300 preset positions; preset tour/pattern support; auto-tracking support
30	Security Features	Password protection, IP filtering, user access log, HTTPS encryption, IEEE 802.1X network access control or equivalent OEM security features
31	Intelligent Video	Motion detection, camera tampering, loitering, line crossing, intrusion, human/vehicle detection, and auto-tracking, wherever supported in the offered OEM model
32	Event Trigger / Action	Support event triggers such as motion, tamper, digital input, manual trigger, SD card full, etc., and actions such as notification, email, HTTP/FTP upload, SD card recording, and move-to-preset, wherever supported
33	Power Input	PoE+ IEEE 802.3at / PoE++ IEEE 802.3bt and/or suitable auxiliary power input as per offered model
34	Working Environment	Operating temperature 0°C to 60°C and humidity 10% to 95% RH or better
35	Protection Rating	Minimum IP66/IP67, IK10, and NEMA 4X or better
36	Compliance and Certification	Availability of security testing report for CCTV/VSS issued by Standardization Testing and Quality certification (STQC) Laboratory or any other agency notified by Meity. BIS Registration (CRS) for safety general requirements as per IS 13252 (Part 1):latest.
37	Cyber Security	Camera shall support secure access and cybersecurity features such as HTTPS, 802.1x, TLS, secure authentication, signed firmware / secure boot / TPM / chipset security / OEM cybersecurity certification / equivalent security compliance as supported by the offered product
38	OEM Undertaking	OEM shall provide undertaking for: (i) no support/use of GB/T 28181 protocol, if required by GEL; (ii) NDAA compliance, if required under tender conditions; (iii) MAC IDs of supplied cameras belonging to OEM; (iv) OEM being ONVIF member and quoted model being listed on ONVIF website, wherever applicable
39	Warranty	5 Years Comprehensive Onsite Warranty

8.4.5MP Dome Camera

Sr. No.	Specification Name	Bid Requirement
1	Camera Type	Fixed Dome IP Camera
2	Application	Indoor / protected area surveillance such as cashier area, office area, customer interaction zone, storeroom, under-canopy protected view, and other similar locations
3	Image Sensor Type	Progressive Scan CMOS Sensor
4	Image Sensor Size	1/2.8" or better
5	Camera Resolution	Minimum 5MP
6	Supported Resolution	5MP (2560 × 1920 / 2592 × 1944), Full HD (1920 × 1080), HD (1280 × 720) or better
7	Day / Night Capability	Yes
8	IR Illumination Range	Minimum 50 m or better
9	Lens Type	Fixed Lens
10	Focal Length	3.0 mm to 11.0 mm or better
11	Frame Rate	Minimum 25 fps at full resolution
12	Video Compression	H.265 / H.265+ / equivalent smart codec optimization, and H.264
13	OEM H.265 Compliance	Camera OEM shall be a genuine manufacturer and a valid H.265 / HEVC licensee at the time of bid submission
14	Video Streaming	Minimum triple stream with independent stream configuration for resolution, frame rate, and quality
15	Stream Profile Requirement	Minimum main stream at 5MP and sub-stream at 720p or better
16	Audio Support	Camera shall support built-in or external microphone connectivity and two-way audio, wherever audio is specifically required under project scope. Audio recording along with video shall be supported wherever enabled in the offered solution.
17	Alarm Support	Yes
18	Alarm I/O	Minimum 1 alarm input and 1 alarm output, if available in offered model
19	Pre / Post Alarm Buffer	Supported
20	Minimum Illumination	0.005 lux @ F1.6 or better for color image, or better OEM standard
21	WDR	True WDR 120 dB or better
22	SNR	50 dB or better

Sr. No.	Specification Name	Bid Requirement
23	Edge Storage and Synchronization	Camera shall support microSD card based edge storage and shall be supplied with minimum 128 GB SD card from day 1, of SDXC Class 10 or higher. In case of temporary NVR/network failure, camera shall automatically record on local SD card and, upon restoration of connectivity, shall support automatic synchronization / backfill to NVR without manual intervention, wherever supported by the offered OEM camera-NVR ecosystem.
24	Network Protocols	IPv4, IPv6, ICMP, TCP, UDP, DHCP, PPPoE, RTP, RTSP, RTCP, DNS, DDNS, NTP, FTP, UPnP, HTTP, HTTPS, SMTP, 802.1x, SNMP, Multicast, SSL/TLS, ONVIF Profile S/G/T
25	Installation Type	Indoor / protected area installation
26	Housing Material	Aluminum / Metal / High-quality OEM standard housing
27	Protection Rating	Minimum IP66 and IK10 rated housing
28	Mounting	Wall / Ceiling Mounted with required accessories
29	Power Input	PoE+ IEEE 802.3at / PoE++ IEEE 802.3bt
30	ONVIF Support	Yes, ONVIF Profile S, G, T
31	Compliance and Certification	Availability of security testing report for CCTV/VSS issued by Standardization Testing and Quality certification (STQC) Laboratory or any other agency notified by Meity. BIS Registration (CRS) for safety general requirements as per IS 13252 (Part 1):latest.
32	Cyber Security	Camera shall support secure access and cybersecurity features such as HTTPS, 802.1x, TLS, secure authentication, signed firmware / secure boot / TPM / chipset security / OEM cybersecurity certification / equivalent security compliance as supported by the offered product
33	OEM Undertaking	OEM shall provide undertaking for: (i) no support/use of GB/T 28181 protocol, if required by GEL; (ii) NDAA compliance, if required under tender conditions; (iii) MAC IDs of supplied cameras belonging to OEM; (iv) OEM being ONVIF member and quoted model being listed on ONVIF website, wherever applicable
34	Warranty	5 Years Comprehensive Onsite Warranty

8.5.5MP Bullet Camera

Sr. No.	Specification Name	Bid Requirement
1	Camera Type	Fixed Bullet IP Camera
2	Application	Outdoor surveillance / directional field coverage such as forecourt, driveway, dispenser approach, parking, canopy edge, circulation area, and perimeter-side observation
3	Image Sensor Type	Progressive Scan CMOS Sensor

Sr. No.	Specification Name	Bid Requirement
4	Image Sensor Size	1/2.8" or better
5	Camera Resolution	Minimum 5MP
6	Supported Resolution	5MP (2560 × 1920 / 2592 × 1944), Full HD (1920 × 1080), HD (1280 × 720) or better
7	Day / Night Capability	Yes
8	IR Illumination Range	Minimum 50 m or better
9	Lens Type	Motorized Varifocal Lens
10	Focal Length	3.0 mm to 11.0 mm or better
11	Frame Rate	Minimum 25 fps at full resolution
12	Video Compression	H.265 / H.265+ / equivalent smart codec optimization, and H.264
13	OEM H.265 Compliance	Camera OEM shall be a genuine manufacturer and a valid H.265 / HEVC licensee at the time of bid submission
14	Video Streaming	Minimum triple stream with independent stream configuration for resolution, frame rate, and quality
15	Stream Profile Requirement	Minimum main stream at 5MP and sub-stream at 720p or better
16	Audio Support	Camera shall support built-in or external microphone connectivity and two-way audio, wherever audio is specifically required under project scope. Audio recording along with video shall be supported wherever enabled in the offered solution.
17	Alarm Support	Yes
18	Alarm I/O	Minimum 1 alarm input and 1 alarm output, if available in offered model
19	Pre / Post Alarm Buffer	Supported
20	Minimum Illumination	0.005 lux @ F1.6 or better for color image, or better OEM standard
21	WDR	True WDR 120 dB or better
22	SNR	50 dB or better
23	Edge Storage and Synchronization	Camera shall support microSD card based edge storage and shall be supplied with minimum 128 GB SD card from day 1, of SDXC Class 10 or higher. In case of temporary NVR/network failure, camera shall automatically record on local SD card and, upon restoration of connectivity, shall support automatic synchronization / backfill to NVR without manual intervention, wherever supported by the offered OEM camera-NVR ecosystem.
24	Network Protocols	IPv4, IPv6, ICMP, TCP, UDP, DHCP, PPPoE, RTP, RTSP, RTCP, DNS, DDNS, NTP, FTP, UPnP, HTTP, HTTPS, SMTP, 802.1x, SNMP, Multicast, SSL/TLS, ONVIF Profile S/G/T
25	Installation Type	Outdoor

Sr. No.	Specification Name	Bid Requirement
26	Housing Material	Aluminum / Metal / High-quality OEM standard housing
27	Protection Rating	Minimum IP67, IK10 and NEMA-4X rated housing
28	Mounting	Wall Mounted with required bracket and accessories
29	Power Input	PoE
30	ONVIF Support	Yes, ONVIF Profile S, G, T
31	Compliance and Certification	Availability of security testing report for CCTV/VSS issued by Standardization Testing and Quality certification (STQC) Laboratory or any other agency notified by Meity. BIS Registration (CRS) for safety general requirements as per IS 13252 (Part 1):latest.
32	Cyber Security	Camera shall support secure access and cybersecurity features such as HTTPS, 802.1x, TLS, secure authentication, signed firmware / secure boot / TPM / chipset security / OEM cybersecurity certification / equivalent security compliance as supported by the offered product
33	OEM Undertaking	OEM shall provide undertaking for: (i) no support/use of GB/T 28181 protocol, if required by GEL; (ii) NDAA compliance, if required under tender conditions; (iii) MAC IDs of supplied cameras belonging to OEM; (iv) OEM being ONVIF member and quoted model being listed on ONVIF website, wherever applicable
34	Warranty	5 Years Comprehensive Onsite Warranty

8.6.5MP Long Range Bullet Camera

Sr. No.	Specification Name	Bid Requirement
1	Camera Type	Fixed Bullet IP Camera
2	Application	Special-purpose outdoor long-range surveillance for boundary, remote gate approach, extended driveway, open yard, or other site-specific long-distance monitoring requirements
3	Image Sensor Type	Progressive Scan CMOS Sensor
4	Image Sensor Size	1/2.8" or better
5	Camera Resolution	Minimum 5MP
6	Supported Resolution	5MP (2560 × 1920 / 2592 × 1944), Full HD (1920 × 1080), HD (1280 × 720) or better
7	Day / Night Capability	Yes
8	IR Illumination Range	Minimum 100 m or better

Sr. No.	Specification Name	Bid Requirement
9	Lens Type	Motorized Varifocal Lens
10	Focal Length	5.0 mm to 50.0 mm or better
11	Frame Rate	Minimum 25 fps at full resolution
12	Video Compression	H.265 / H.265+ / equivalent smart codec optimization, and H.264
13	OEM H.265 Compliance	Camera OEM shall be a genuine manufacturer and a valid H.265 / HEVC licensee at the time of bid submission
14	Video Streaming	Minimum triple stream with independent stream configuration for resolution, frame rate, and quality
15	Stream Profile Requirement	Minimum main stream at 5MP and sub-stream at 720p or better
16	Audio Support	Camera shall support built-in or external microphone connectivity and two-way audio, wherever audio is specifically required under project scope. Audio recording along with video shall be supported wherever enabled in the offered solution.
17	Alarm Support	Yes
18	Alarm I/O	Minimum 1 alarm input and 1 alarm output, if available in offered model
19	Pre / Post Alarm Buffer	Supported
20	Minimum Illumination	0.005 lux @ F1.6 or better for color image, or better OEM standard
21	WDR	True WDR 120 dB or better
22	SNR	50 dB or better
23	Edge Storage and Synchronization	Camera shall support microSD card based edge storage and shall be supplied with minimum 128 GB SD card from day 1, of SDXC Class 10 or higher. In case of temporary NVR/network failure, camera shall automatically record on local SD card and, upon restoration of connectivity, shall support automatic synchronization / backfill to NVR without manual intervention, wherever supported by the offered OEM camera-NVR ecosystem.
24	Network Protocols	IPv4, IPv6, ICMP, TCP, UDP, DHCP, PPPoE, RTP, RTSP, RTCP, DNS, DDNS, NTP, FTP, UPnP, HTTP, HTTPS, SMTP, 802.1x, SNMP, Multicast, SSL/TLS, ONVIF Profile S/G/T
25	Installation Type	Outdoor
26	Housing Material	Aluminum / Metal / High-quality OEM standard housing
27	Protection Rating	Minimum IP67, IK10 and NEMA-4X rated housing
28	Mounting	Wall Mounted with required bracket and accessories

Sr. No.	Specification Name	Bid Requirement
29	Power Input	PoE
30	ONVIF Support	Yes, ONVIF Profile S, G, T
31	Compliance and Certification	Availability of security testing report for CCTV/VSS issued by Standardization Testing and Quality certification (STQC) Laboratory or any other agency notified by Meity. BIS Registration (CRS) for safety general requirements as per IS 13252 (Part 1):latest.
32	Cyber Security	Camera shall support secure access and cybersecurity features such as HTTPS, 802.1x, TLS, secure authentication, signed firmware / secure boot / TPM / chipset security / OEM cybersecurity certification / equivalent security compliance as supported by the offered product
33	OEM Undertaking	OEM shall provide undertaking for: (i) no support/use of GB/T 28181 protocol, if required by GEL; (ii) NDAA compliance, if required under tender conditions; (iii) MAC IDs of supplied cameras belonging to OEM; (iv) OEM being ONVIF member and quoted model being listed on ONVIF website, wherever applicable
34	Warranty	5 Years Comprehensive Onsite Warranty

8.7.5MP PTZ Camera 30X

Sr. No.	Specification Name	Bid Requirement
1	Camera Type	PTZ IP Camera
2	Application	Outdoor surveillance, large area monitoring, long-range verification, perimeter watch, open yard observation, and incident-based operator control
3	Image Sensor Type	Progressive Scan CMOS Sensor
4	Image Sensor Size	1/2.8" or better
5	Camera Resolution	Minimum 5MP
6	Supported Resolution	5MP (2560 × 1920 / 2592 × 1944), Full HD (1920 × 1080), HD (1280 × 720) or better
7	Day / Night Capability	Yes
8	Minimum Illumination	Color: 0.005 lux @ F1.6 or better; B/W: 0 lux with IR ON
9	Scanning System	Progressive
10	SNR	55 dB or better
11	IR Illumination Range	Minimum 200 m or better

Sr. No.	Specification Name	Bid Requirement
12	IR Control	Automatic IR intensity adjustment with auto IR ON/OFF control
13	WDR	True WDR 120 dB or better
14	Optical Zoom	Minimum 30X optical zoom
15	Focal Length	4.3 mm to 129 mm or equivalent range meeting minimum 30X optical zoom requirement; $\pm 25\%$ variation acceptable
16	Focus Control	Auto / Manual
17	Video Compression	H.265 / H.265+ / equivalent smart codec optimization, and H.264
18	OEM H.265 Compliance	Camera OEM shall be a genuine manufacturer and a valid H.265 / HEVC licensee at the time of bid submission
19	Video Streaming	Minimum triple stream with independent stream configuration for resolution, frame rate, and quality
20	Stream Profile Requirement	Camera shall support minimum two streams at 2MP or better
21	Frame Rate	Minimum 25 fps at 5MP resolution and minimum 50/60 fps at 2MP resolution
22	Day/Night / Image Controls	Automatic day/night switching, with color/mono mode selection, auto/manual white balance, and 2D/3D noise reduction
23	Video Functions	Motion detection and region of interest support required
24	Ethernet	RJ-45, 10/100 Base-T or better
25	Alarm I/O	Minimum 1 alarm input and 1 alarm output for third-party interface
26	Network Protocols	IPv4, IPv6, ICMP, TCP, UDP, DHCP, PPPoE, RTP, RTSP, RTCP, DNS, DDNS, NTP, FTP, UPnP, HTTP, HTTPS, SMTP, 802.1x, SNMP, Multicast, SSL/TLS, ONVIF Profile S/G/T
27	Streaming Method	Unicast / Multicast
28	Edge Storage and Synchronization	Camera shall support microSD card based edge storage and shall be supplied with minimum 128 GB SD card from day 1, of SDXC Class 10 or higher. In case of temporary NVR/network failure, camera shall automatically record on local SD card and, upon restoration of connectivity, shall support automatic synchronization / backfill to NVR without manual intervention, wherever supported by the offered OEM camera-NVR ecosystem.
29	PTZ Performance	Pan: 360° endless/continuous; Tilt: suitable PTZ tilt range with auto flip; manual and auto pan/tilt speed control; minimum 300 preset positions; preset tour/pattern support; auto-tracking support
30	Security Features	Password protection, IP filtering, user access log, HTTPS encryption, IEEE 802.1X network access control or equivalent OEM security features
31	Intelligent Video	Motion detection, camera tampering, loitering, line crossing, intrusion, human/vehicle detection, and auto-tracking, wherever supported in the offered OEM model

Sr. No.	Specification Name	Bid Requirement
32	Event Trigger / Action	Support event triggers such as motion, tamper, digital input, manual trigger, SD card full, etc., and actions such as notification, email, HTTP/FTP upload, SD card recording, and move-to-preset, wherever supported
33	Power Input	PoE+ IEEE 802.3at / PoE+ + IEEE 802.3bt
34	Working Environment	Operating temperature 0°C to 60°C and humidity 10% to 95% RH or better
35	Protection Rating	Minimum IP66/IP67, IK10, and NEMA 4X or better
36	Compliance and Certification	Availability of security testing report for CCTV/VSS issued by Standardization Testing and Quality certification (STQC) Laboratory or any other agency notified by Meity. BIS Registration (CRS) for safety general requirements as per IS 13252 (Part 1):latest.
37	Cyber Security	Camera shall support secure access and cybersecurity features such as HTTPS, 802.1x, TLS, secure authentication, signed firmware / secure boot / TPM / chipset security / OEM cybersecurity certification / equivalent security compliance as supported by the offered product
38	OEM Undertaking	OEM shall provide undertaking for: (i) no support/use of GB/T 28181 protocol, if required by GEL; (ii) NDAA compliance, if required under tender conditions; (iii) MAC IDs of supplied cameras belonging to OEM; (iv) OEM being ONVIF member and quoted model being listed on ONVIF website, wherever applicable
39	Warranty	5 Years Comprehensive Onsite Warranty

8.8.2MP Motorized ANPR / LPR Bullet Camera

Sr. No	Specification Name	Bid Requirement
1	Camera Type	ANPR / LPR IP Camera
2	Application	Vehicle number plate capture at gas station / field site entry and exit points under low-speed controlled vehicle movement conditions
3	Camera Resolution	Minimum 2MP; higher resolution acceptable if OEM validated for ANPR use case
4	Supported Resolution	Minimum 1920 × 1080 or better
5	Frame Rate	Minimum 50 fps at 1080p; 60 fps preferred
6	Video Compression	H.265 / H.265+ / equivalent smart codec optimization, and H.264
7	OEM H.265 Compliance	Camera OEM shall be a genuine manufacturer and a valid H.265 / HEVC licensee at the time of bid submission
8	Image Sensor	1/2.8" Progressive Scan CMOS or better
9	Lens Type	Motorized Varifocal Lens with remote focus and zoom

Sr. No	Specification Name	Bid Requirement
10	Focal Length	Approximately 5 mm to 50/60 mm or suitable OEM ANPR lens range based on lane geometry and capture distance
11	Electronic Shutter	Suitable high shutter speed for moving vehicle plate capture; minimum up to 1/50,000 sec or better
12	Minimum Illumination	Color: 0.005 lux or better; B/W: 0 lux with IR ON
13	Day/Night Mode	Auto / Day / Night / Schedule / Custom profile
14	SNR	55 dB or better
15	WDR	True WDR 120 dB or better
16	IR / Illumination	Integrated or external IR illumination suitable for number plate readability in day/night conditions and reflective plate environments
17	Video Streaming	Minimum triple stream with independent stream configuration for resolution, frame rate, and quality
18	Stream Requirement	Minimum main recording stream at 1080p and additional stream(s) as required for remote view/processing
19	Image Controls	Brightness, sharpness, contrast, white balance, gain control, BLC/HLC, defog, ROI, profile scheduling, and timestamp/title overlay
20	Privacy Mask	Minimum 4 regions or OEM standard
21	Audio Support	Optional / where specifically required. ANPR camera shall support audio only if part of offered model and approved use case.
22	Edge Storage and Synchronization	Camera shall support microSD card based edge storage and shall be supplied with minimum 128 GB SD card from day 1, of SDXC Class 10 or higher. In case of temporary NVR/network failure, camera shall automatically record on local SD card and, upon restoration of connectivity, shall support automatic synchronization / backfill to NVR without manual intervention, wherever supported by the offered OEM camera-NVR ecosystem.
23	Network Protocols	IPv4, IPv6, ICMP, TCP/IP, UDP, DHCP, PPPoE, RTP, RTSP, RTCP, DNS, DDNS, NTP, FTP, HTTP, HTTPS, SMTP, 802.1x, SNMP, Multicast, SSL/TLS, ONVIF Profile S/G/T, VLAN or equivalent supported protocols
24	Security Features	Password protection, IP filtering, user access log, HTTPS, secure authentication, 802.1x or equivalent OEM security features
25	ANPR Function	Camera / offered solution shall support number plate capture and recognition for selected site entry/exit points
26	Vehicle Attributes	The offered solution should support vehicle image capture and, where supported by OEM standard ANPR solution, vehicle classification / color / make-model recognition. Such advanced features shall be considered desirable and shall be quoted only if natively supported.
27	Lane Coverage	Normally one lane per camera preferred for better accuracy. Multi-lane coverage, if proposed, shall be supported by OEM design and bidder shall clearly state lane-wise accuracy.
28	Vehicle Speed Suitability	Suitable for low-speed gas station / forecourt vehicle movement conditions. High-speed enforcement capability is not mandatory.

Sr. No	Specification Name	Bid Requirement
29	Recognition Accuracy	OEM-supported practical accuracy suitable for controlled entry/exit deployment conditions.Approx. 90% expected recognition accuracy under proposed operating condition.
30	Alarm / Event Triggers	Motion detection, whitelist/blacklist event, plate event, digital input, tamper, storage event, or equivalent supported ANPR/alarm triggers
31	Alarm / Event Actions	HTTP notification, FTP/email upload, SD card record, external output, application event generation, or equivalent OEM-supported action
32	Alarm I/O	Minimum 1 input and 1 output, if available in offered model
33	Network Interface	RJ-45, 10/100 Base-T or better
34	Operating Conditions	Suitable for Indian outdoor field conditions including gas station environment
35	Humidity	10% to 95% RH or better
36	Protection Rating	Minimum IP66/IP67, IK10, NEMA 4X or better
37	Power Input	PoE / PoE+ and/or suitable auxiliary power input as per offered model
38	Mounting	Suitable outdoor mounting accessories, brackets, housings, and protective accessories shall be included
39	Compliance and Certification	Availability of security testing report for CCTV/VSS issued by Standardization Testing and Quality certification (STQC) Laboratory or any other agency notified by Meity. BIS Registration (CRS) for safety general requirements as per IS 13252 (Part 1):latest.
40	Cyber Security	Camera shall support secure access and cybersecurity features such as HTTPS, 802.1x, TLS, secure authentication, signed firmware / secure boot / TPM / chipset security / OEM cybersecurity certification / equivalent security compliance as supported by the offered product
41	OEM Undertaking	OEM shall provide undertaking for: (i) no support/use of GB/T 28181 protocol, if required by GEL; (ii) NDAA compliance, if required under tender conditions; (iii) MAC IDs of supplied cameras belonging to OEM; (iv) OEM being ONVIF member and quoted model being listed on ONVIF website, wherever applicable
42	Warranty	5 Years Comprehensive Onsite Warranty

- ANPR/LPR cameras shall be deployed only at selected entry/exit points and shall not be treated as general-purpose surveillance cameras.
- The bidder shall design the ANPR/LPR point considering actual lane width, vehicle approach angle, mounting height, target distance, illumination, and reflective number plate behavior to ensure practical recognition performance.
- For better recognition accuracy in gas station environments, single-lane or controlled narrow-lane coverage is preferred. If multi-lane coverage is proposed, the bidder shall clearly declare expected accuracy and OEM design compliance.

- If the offered OEM ANPR/LPR solution requires separate LPU / local processing unit, the bidder shall include the same along with all required hardware, software, licenses, database, integration, search client, and central access mechanism.
- The bidder shall design the ANPR/LPR solution to achieve a practical number plate recognition accuracy of minimum 90% under normal operating conditions at the intended gas station entry/exit point. The bidder shall clearly declare the expected recognition accuracy of the offered solution and the assumptions/limitations associated with it.

8.9. IR Illuminator

Sr. No.	Parameter	Min. Requirement
1	Type	High efficiency ultimate LED technology (Covert IR Wavelengths: 850 nm or 940 nm)
2	Distance	Upto 95-100 m
3	Construction	Rugged Weatherproof, IP 66 or better
4	Power	Input Power 230 VAC/POE++
5	Other feature	Automatic On/Off facility Beam pattern up to 60 Deg or better
6	Certification	CE, FCC & Eye Safety

8.10. Joystick

Sr. No.	Parameter	Minimum Specification
1	General	IP Based Control Board with auto search support
2		LCD/LED screen display
3		Joystick
4		Network Protocol: IPv4, TCP/IP, ONVIF
5		Network interface: 1x RJ45 10M/100M
6		Should support PAN, Tilt, Zoom, Focus & other functions
7		Minimum 20 programmable buttons
8		Power Supply: DC12V $\pm$ 10%
9		Working Temperature: 0°C to +50°C
10		Working Humidity: 20% to 80%
11		Certificates: CE & FCC

8.11. 16-port Indoor PoE switch with SFP

Sr. No.	Parameter	Minimum Specification
1.	Type	Managed Layer 2+ PoE Switch with Static Routing and Inter-VLAN Routing capability (Layer 3 Lite)

Sr. No.	Parameter	Minimum Specification
2.	Total Ports	• Minimum 16 x 10/100/1000 Mbps RJ-45 PoE/PoE+ ports • Minimum 2 x 1G SFP (1000BASE-X) uplink ports • All required SFPs and patch cords must be included • Forwarding rate : Minimum 26 Mpps or Better • Auto MDI/MDI-X, auto-negotiation • Minimum 36 Gbps switching capacity, non-blocking for all access and uplink ports.
3.	PoE Standard	• IEEE 802.3af (PoE)/IEEE 802.3at (PoE+)
4.	Protocols	• IPv4 and IPv6 support • IGMP Snooping v1/v2 support (v3 optional) • SNMP v1/v2/v3 • Loop detection / loop protection • NTP/SNTP time synchronization
5.	Access Control & Security	• Port security with MAC address limiting • IEEE 802.1X port-based access control • Basic ACLs (MAC / IP / protocol / TCP-UDP port based) • RADIUS/TACACS+ for switch security access administration • Storm control • DHCP Snooping
6.	Operating Temperature	• 0°C to +45°C or better • Humidity: 10% to 90% non-condensing
7.	Management	• Web-based GUI (HTTPS support) • Command Line Interface (CLI) via console and SSH
8.	VLAN Support	• IEEE 802.1Q VLAN tagging • Min. 256 VLAN groups or better • Support all VLAN IDs • Management VLAN • Inter VLAN Routing, Static Routing, IP Routing • Link Aggregation
9.	Spanning Tree Protocol	• IEEE 802.1D/802.1w/802.1s Spanning Tree / Rapid Spanning Tree/ MSTP
10.	MAC Address Table	• Minimum 8K MAC address table • Static MAC address configuration (256 entries) • Packet buffer: Minimum 1MB or better
11.	Power Specifications	• AC Input: 100-240V, 50/60Hz • Switch with internal power adaptor • PoE power budget: Minimum 240W

Sr. No.	Parameter	Minimum Specification
12.	Physical Specifications	• Rack mountable with brackets and all required accessories included • Metal Body enclosure • LED indicators for power, link/activity, PoE status
13.	Compliance/Certification	• BIS, CE/ FCC / UL • RoHS compliance
14.	Warranty & Support	• 5 years comprehensive OEM warranty • Regular firmware updates and security patches
15.	Documentation & Training	• Installation and configuration manual
16.	Proposed Make/Brand	
17.	Proposed Model Number	

8.12. 8 Ch Embedded Network Video Recorder with 2 SATA Interfaces

Sr. No.	Specification Name	Bid Requirement
1	Type	Standalone Network Video Recorder (NVR)
2	Channel Capacity	Minimum 8 IP video channels
3	Application	Site-level primary recording for CCTV surveillance system at gas station / field location
4	Recording Architecture	Shall support local recording of all connected cameras and remote live view / remote playback through OEM CMS / viewing software
5	Supported Camera Resolution	Support recording up to 8 channels at up to 4K resolution or offered camera resolution, whichever is higher supported by OEM model
6	Recording Compression	H.265 / H.265+ / equivalent smart codec optimization, and H.264
7	Incoming Bandwidth	Minimum 80 Mbps incoming bandwidth or better
8	Video Output	Minimum 1 HDMI and 1 VGA output
9	Display Capability	Support live view of minimum 8 channels in single screen and synchronous playback of minimum 8 channels
10	Storage Bays	Minimum 2 SATA HDD bays
11	HDD Support	Support minimum 10 TB per HDD or better
12	Supplied Storage Capacity	Shall be supplied with minimum 8 TB usable recording storage or higher as required to meet the specified retention requirement. Bidder shall size and provide higher storage if required to meet 30-day retention based on actual camera resolution, frame rate, bitrate, compression, and recording mode.

Sr. No.	Specification Name	Bid Requirement
13	Network Interface	Minimum 1 Gigabit Ethernet port
14	USB Interface	Minimum 2 USB ports
15	Backup Support	Support video/data backup through USB and network
16	ONVIF Support	Yes, ONVIF Profile S, G, T
17	Remote Access	Shall support remote live view, remote playback, device health monitoring, clip export, and user access through OEM CMS / viewing software
18	Playback Functions	Support timeline playback, event playback, search, snapshot, and clip export
19	Alarm Interface	Minimum 4 alarm inputs and 1 alarm output, if available in offered model
20	Recording Modes	Continuous, scheduled, event-based, and manual recording
21	ANR / Backfill	Shall support Automatic Network Replenishment (ANR) / backfill from compatible edge-storage cameras wherever supported in offered OEM ecosystem
22	Pre / Post Recording	Supported
23	Audio Support	Shall support audio recording for audio-enabled camera channels, wherever audio is enabled in the project scope
24	User Management	Multi-user access with role-based permissions
25	Health Monitoring	Support HDD status, recording status, camera online/offline status, network alarm, and system event monitoring
26	Export Function	Support export of video clips, snapshots, and relevant event data in standard or OEM evidence format
27	ANPR / LPR Integration Support	NVR shall support recording and playback of ANPR/LPR camera streams and associated events. Where supported by the offered OEM ecosystem, the NVR/CMS solution should support display, search, or export of related ANPR event information.
28	Operating Conditions	Suitable for 24x7 continuous duty deployment
29	Mounting	Desktop / rack-mount / shelf-mount form factor as per offered model and site requirement
30	Compliance and Certification	NVR shall comply with applicable BIS requirements and relevant product safety standards. The offered product shall have FCC / CE / BIS / UL 62368-1 or equivalent Indian Standard certification. In case of Make in India product, UL certification may be replaced by valid certification from NABL-approved lab / STQC lab with equivalent IEC 62368-1 compliance, as applicable.
31	Cyber Security	NVR shall support secure authentication, user management, HTTPS or equivalent secure access, event logs, and OEM cybersecurity compliance features applicable to the offered model
32	OEM Undertaking	OEM shall provide undertaking for authenticity of supplied product, ONVIF support of quoted model where applicable, and compliance with tender cybersecurity / protocol declarations as required
33	Warranty	5 Years Comprehensive Onsite Warranty

8.13. 24 Port CAT 6 Patch Panel

Sr. No.	Parameter	Specification
1	Material	Powder Coated Steel

2	Ports	24 Port
3	Size	483mm X 44.2mm (1U)
4	Colour	Black
5	Mounting Style	Punch Down (Module)
6	Compatible	Compatible with both T568A and T568B wiring options.
7	AWG Support	Supports solid 22-24 AWG wires and stranded 24-26 AWG
8	Connector Module Holder	High Impact, Flame-Retardant Plastic Compound
9	Flammability Rating	UL 94V-0
10	Safety Rating	UL1863
11	Identification	Each port of the panel is numbered and has a designated
12	Cable Management	Rear cable management bar which should act as stress
13	Standards Compliance	ISO/IEC 11801 Class E, TIA/EIA-568B.2-1
14	Application	IEEE 802.af, IEEE 802.3at for PoE applications.
15	Certification	UL, CE, ETL Channel Tested
CAT 6 Unshielded Keystone Jack		
16	Material	High Impact, Flame-Retardant Plastic Compound
17	Type	Category 6
18	Insertion/Extraction life	750 cycle minimum
19	Jack Contact Material	50μ Nickel over gold
20	Conductor Compatibility Range	22-26AWG solid cable
21	IDC Type	Dual (110 Or Krone) Type
22	Current rating	1.5A max
23	Insulation resistance	500 M ohm (min)@100 Vdc
24	Contact Resistance	20 M ohm (max) per contact
25	Retention	50N
26	Voltage rating	230 V rms max.
27	Flammability Rating	UL 94V-0
28	Safety Rating	UL1863
29	Colour Coding	As Per 568 A/B Standards
30	Standards Compliance	ANSI/TIA-568-C.2, ISO/IEC-11801, EN50173-2
31	Application	IEEE 802.af, IEEE 802.3at for PoE applications
32	Certification	UL, CE

8.14. 16 Channel NVR

Sr. No.	Specification Name	Min. Requirement
1	Type	Standalone Network Video Recorder (NVR)
2	Channel Capacity	Minimum 16 IP video channels
3	Application	Site-level primary recording for CCTV surveillance system
4	Recording Architecture	Shall support local recording of all connected cameras and remote live view / remote playback through OEM CMS / viewing software
5	Supported Camera Resolution	Support recording up to 16 channels at up to 4K resolution or offered camera resolution, whichever is supported by OEM model
6	Recording Compression	H.265 / H.265+ / equivalent smart codec optimization, and H.264
7	Incoming Bandwidth	Minimum 160 Mbps incoming bandwidth or better
8	Video Output	Minimum 1 HDMI and 1 VGA output

Sr. No.	Specification Name	Min. Requirement
9	Display Capability	Support live view of minimum 8 channels in single screen at 1080p and synchronous playback of minimum 8 channels at 1080p or better
10	Storage Bays	Minimum 4 SATA HDD bays
11	HDD Support	Support minimum 10 TB per HDD or better
12	Supplied Storage Capacity	Should be supplied with minimum 32 TB recording storage or higher as required to meet the specified retention requirement. This is only an indicative minimum. The bidder shall ensure that the proposed NVR and HDD configuration is adequate for storing minimum 30 days of required video and audio footage. Any additional storage required to meet retention shall be provided by the bidder without extra cost to GEL.
13	RAID Support	RAID 0 / 1 / 5 / 6 / 10
14	Network Interface	Minimum 2 Gigabit Ethernet ports with load balancing and failover support
15	USB Interface	Minimum 2 USB ports including USB 2.0 / USB 3.0 support
16	Backup Support	Support video/data backup through network and USB
17	ONVIF Support	Yes, ONVIF Profile S, G, T
18	Remote Access	Shall support remote live view, remote playback, device health monitoring, clip export, and user access through OEM CMS / viewing software
19	Playback Functions	Support timeline playback, event playback, search, snapshot, and clip export
20	Alarm / Serial Interface	Minimum 16 alarm inputs, 4 alarm outputs, and 2 serial interfaces (RS232 / RS485), if available in offered model
21	Recording Modes	Continuous, scheduled, event-based, and manual recording
22	ANR / Backfill	Shall support Automatic Network Replenishment (ANR) / backfill from compatible edge-storage cameras wherever supported in offered OEM ecosystem
23	Pre / Post Recording	Supported
24	Audio Support	Shall support audio and video recording for audio-enabled camera channels, wherever audio is enabled in the project scope
25	User Management	Multi-user access with role-based permissions
26	Health Monitoring	Support HDD status, RAID status, recording status, camera online/offline status, network alarm, and system event monitoring
27	Export Function	Support export of video clips, snapshots, and relevant event data in standard or OEM evidence format
28	Operating Conditions	Operating temperature 0°C to 50°C or better
29	Form Factor	Rack-mounted
30	Compliance and Certification	NVR shall comply with applicable BIS requirements and relevant product safety standards. The offered product shall have FCC / CE / BIS / UL 62368-1 or equivalent Indian Standard certification. In case of Make in India product, UL certification may be replaced by valid certification from NABL-approved lab / STQC lab with equivalent IEC 62368-1 compliance, as applicable. OEM should have ISO 9001 and ISO 14001 certification or latest equivalent for manufacturing.
31	Cyber Security	NVR shall support secure authentication, user management, HTTPS or equivalent secure access, event logs, and OEM cybersecurity compliance features applicable to the offered model
32	Warranty	5 Years Comprehensive Onsite Warranty

8.15. 32 Channel NVR with 8 SATA Interface

Sr. No.	Specification Name	Min. Requirement
1	Type	Standalone Network Video Recorder (NVR)
2	Channel Capacity	Minimum 32 IP video channels
3	Application	Site-level primary recording for CCTV surveillance system
4	Recording Architecture	Shall support local recording of all connected cameras and remote live view / remote playback through OEM CMS / viewing software
5	Supported Camera Resolution	Support recording up to 32 channels at up to 4K resolution or offered camera resolution, whichever is supported by OEM model
6	Recording Compression	H.265 / H.265+ / equivalent smart codec optimization, and H.264
7	Incoming Bandwidth	Minimum 320 Mbps incoming bandwidth or better
8	Video Output	Minimum 1 HDMI and 1 VGA output
9	Display Capability	Support live view of minimum 16 channels in single screen at 1080p and synchronous playback of minimum 16 channels at 1080p or better
10	Storage Bays	Minimum 8 SATA HDD bays
11	HDD Support	Support minimum 10 TB per HDD or better
12	Supplied Storage Capacity	Should be supplied with minimum 32 TB recording storage or higher as required to meet the specified retention requirement. This is only an indicative minimum. The bidder shall ensure that the proposed NVR and HDD configuration is adequate for storing minimum 30 days of required video and audio footage. Any additional storage required to meet retention shall be provided by the bidder without extra cost to GEL.
13	RAID Support	RAID 0 / 1 / 5 / 6 / 10
14	Network Interface	Minimum 2 Gigabit Ethernet ports with load balancing and failover support
15	USB Interface	Minimum 2 USB ports including USB 2.0 / USB 3.0 support
16	Backup Support	Support video/data backup through network and USB
17	ONVIF Support	Yes, ONVIF Profile S, G, T
18	Remote Access	Shall support remote live view, remote playback, device health monitoring, clip export, and user access through OEM CMS / viewing software
19	Playback Functions	Support timeline playback, event playback, search, snapshot, and clip export
20	Alarm / Serial Interface	Minimum 16 alarm inputs, 4 alarm outputs, and 2 serial interfaces (RS232 / RS485), if available in offered model
21	Recording Modes	Continuous, scheduled, event-based, and manual recording
22	ANR / Backfill	Shall support Automatic Network Replenishment (ANR) / backfill from compatible edge-storage cameras wherever supported in offered OEM ecosystem
23	Pre / Post Recording	Supported
24	Audio Support	Shall support audio and video recording for audio-enabled camera channels, wherever audio is enabled in the project scope
25	User Management	Multi-user access with role-based permissions
26	Health Monitoring	Support HDD status, RAID status, recording status, camera online/offline status, network alarm, and system event monitoring
27	Export Function	Support export of video clips, snapshots, and relevant event data in standard or OEM evidence format
28	Operating Conditions	Operating temperature 0°C to 50°C or better

Sr. No.	Specification Name	Min. Requirement
29	Form Factor	Rack-mounted
30	Compliance and Certification	NVR shall comply with applicable BIS requirements and relevant product safety standards. The offered product shall have FCC / CE / BIS / UL 62368-1 or equivalent Indian Standard certification. In case of Make in India product, UL certification may be replaced by valid certification from NABL-approved lab / STQC lab with equivalent IEC 62368-1 compliance, as applicable. OEM should have ISO 9001 and ISO 14001 certification or latest equivalent for manufacturing.
31	Cyber Security	NVR shall support secure authentication, user management, HTTPS or equivalent secure access, event logs, and OEM cybersecurity compliance features applicable to the offered model
32	Warranty	5 Years Comprehensive Onsite Warranty

8.16. 64 Channel NVR with 8 SATA Interface

Sr. No.	Specification Name	Min Requirement
1	Type	Standalone Network Video Recorder (NVR)
2	Channel Capacity	Minimum 64 IP video channels
3	Application	Site-level primary recording for CCTV surveillance system
4	Recording Architecture	Shall support local recording of all connected cameras and remote live view / remote playback through OEM CMS / viewing software
5	Supported Camera Resolution	Support recording up to 64 channels at up to 4K resolution or offered camera resolution, whichever is supported by OEM model
6	Recording Compression	H.265 / H.265+ / equivalent smart codec optimization, and H.264
7	Incoming Bandwidth	Minimum 320 Mbps incoming bandwidth or better
8	Video Output	Minimum 1 HDMI and 1 VGA output
9	Display Capability	Support live view of minimum 16 channels in single screen at 1080p and synchronous playback of minimum 16 channels at 1080p or better
10	Storage Bays	Minimum 8 SATA HDD bays
11	HDD Support	Support minimum 10 TB per HDD or better
12	Supplied Storage Capacity	Shall be supplied with minimum 64 TB recording storage or higher as required to meet the specified retention requirement. This is only an indicative minimum. The bidder shall ensure that the proposed NVR and HDD configuration is adequate for storing minimum 30 days of required video and audio footage. Any additional storage required to meet retention shall be provided by the bidder without extra cost to GEL.
13	RAID Support	RAID 0 / 1 / 5 / 6 / 10
14	Network Interface	Minimum 2 Gigabit Ethernet ports with load balancing and failover support
15	USB / eSATA Interface	Minimum 2 USB ports including USB 2.0 / USB 3.0 support and minimum 1 eSATA port, if supported by offered model
16	Backup Support	Support video/data backup through network, USB, and eSATA where applicable
17	ONVIF Support	Yes, ONVIF Profile S, G, T
18	Remote Access	Shall support remote live view, remote playback, device health monitoring, clip export, and user access through OEM CMS / viewing software
19	Playback Functions	Support timeline playback, event playback, search, snapshot, and clip export

Sr. No.	Specification Name	Min Requirement
20	Alarm / Serial Interface	Minimum 16 alarm inputs, 4 alarm outputs, and 2 serial interfaces (RS232 / RS485), if available in offered model
21	Recording Modes	Continuous, scheduled, event-based, and manual recording
22	ANR / Backfill	Shall support Automatic Network Replenishment (ANR) / backfill from compatible edge-storage cameras wherever supported in offered OEM ecosystem
23	Pre / Post Recording	Supported
24	Audio Support	Shall support audio and video recording for audio-enabled camera channels, wherever audio is enabled in the project scope
25	User Management	Multi-user access with role-based permissions
26	Health Monitoring	Support HDD status, RAID status, recording status, camera online/offline status, network alarm, and system event monitoring
27	Export Function	Support export of video clips, snapshots, and relevant event data in standard or OEM evidence format
28	Operating Conditions	Operating temperature 0°C to 50°C or better
29	Form Factor	Rack-mounted
30	Compliance and Certification	NVR shall comply with applicable BIS requirements and relevant product safety standards. The offered product shall have FCC / CE / BIS / UL 62368-1 or equivalent Indian Standard certification. In case of Make in India product, UL certification may be replaced by valid certification from NABL-approved lab / STQC lab with equivalent IEC 62368-1 compliance, as applicable. OEM should have ISO 9001 and ISO 14001 certification or latest equivalent for manufacturing.
31	Cyber Security	NVR shall support secure authentication, user management, HTTPS or equivalent secure access, event logs, and OEM cybersecurity compliance features applicable to the offered model
32	Warranty	5 Years Comprehensive Onsite Warranty

8.17. VMS for Monitoring

Sr. No.	Specification Name	Min. Requirement
1	Software Type	OEM-provided Central Monitoring / Client Viewing Software (CMS / VMS Client) for current-phase distributed NVR-based surveillance architecture
2	Licensing Basis	OEM freeware / no-cost client software, or OEM software with all required current-scope client entitlements included in bidder scope
3	Application	Centralized live viewing, remote playback, health monitoring, event review, user-based monitoring, and clip export from remote site NVRs and cameras
4	Architecture Support	Software shall support distributed architecture with local recording on remote embedded NVRs and centralized access from designated monitoring workstation/server
5	Device Management	Software shall support device management for cameras, NVRs, PTZ cameras, and other supported OEM IP devices
6	User Management	Software shall support user account creation, role-based access, password management, and privilege assignment
7	Multi-Site Access	A single client workstation shall be able to access multiple remote embedded NVRs simultaneously and allow authorized viewing, playback, and configuration access as supported by the OEM software

Sr. No.	Specification Name	Min. Requirement
8	Minimum Device / Channel Support	Software should support at least 100 IP devices such as NVRs/encoders/decoders or at least 300 IP channels, or higher, under the offered current-scope architecture
9	Live Viewing	Software shall support remote live viewing of cameras connected through remote site NVRs
10	Remote Playback	Software shall support query and playback of recorded video from remote embedded NVRs
11	Video Download / Export	Software shall support download/export of recorded video clips during playback in standard playable format or OEM evidence format with player
12	Display Split Layout	Software shall support video split layouts such as 1 / 4 / 9 / 16 / 25 / 36 / 49 / 64 / 81 / 100 or customized layouts, subject to hardware and software capability
13	Multi-View Monitoring	Software shall support multi-view live monitoring on operator screen(s)
14	Device Operations	Software shall support device discovery/auto-find, add, delete, grouping, reboot, configuration, and other standard device management operations as supported by the OEM
15	Health Monitoring	Software shall support health/status reporting such as device online/offline status, alarm information, HDD information, recording status, and system/device information
16	Encoder / Decoder Support	Software shall support integration of OEM-supported IP encoders/decoders wherever applicable
17	Playback Screen Capability	Software shall support minimum 16-channel playback screen or better
18	Operator Functions	Software shall support multi-screen split, snapshot, local manual recording, audio, talkback, alarm output control, and PTZ control including PTZ movement, presets, cruise, auto-scan, pattern, focus, and joystick control wherever supported
19	Video Source Support	Software shall support access to video from device-side storage such as remote NVR storage and camera edge storage where supported. Centralized storage access may be supported only if such storage is introduced by GEL in future or separately provisioned.
20	Configuration Import / Export	Software shall support import/export of configuration files and related setup backup/restore functions
21	Video Export Format	Software shall support video export in playable format such as AVI / MKV / MP4 or OEM evidence format with player, as supported by the offered solution
22	Playback Features	Software shall support playback functions such as snapshot, audio playback where applicable, E-PTZ, playback speed increase/decrease up to 8X or better, synchronized playback, time search, motion search, and alarm/event search
23	Alarm/Event Support	Software shall support alarms/events such as external alarm, video loss, motion, tampering, disk full/error, and other events supported by the connected OEM devices
24	Event Actions	Software shall support event actions such as trigger recording, PTZ movement, operator alarm indication, video pop-up, and related supported event response actions
25	Device Configuration Access	Software shall support remote device configuration such as network, encoding, PTZ, image, event, record, storage, account, and maintenance settings, subject to user privilege and OEM support
26	Alarm Pop-up	Software shall support receiving and pop-up display of alarms/events generated by cameras, NVRs, and other supported OEM IP devices
27	Analytics Event Support	Software shall support receiving and displaying analytics/events generated by the connected IP cameras and NVRs, wherever supported in the OEM ecosystem
28	Log Support	Software shall support logs such as client log, remote device log, operation log, system log, and alarm/event log
29	Secure Connectivity	Software shall support secure remote access over LAN/WAN/Internet through approved OEM connectivity method such as direct IP, VPN, secure tunnel, or OEM-secure P2P where permitted by GEL

Sr. No.	Specification Name	Min. Requirement
30	P2P Support	P2P connectivity for live viewing, playback, and alert management may be supported only if compliant with GEL cybersecurity policy and approved architecture. If P2P is restricted by GEL, bidder shall provide alternate secure remote access method.
31	Camera Naming / Site Grouping	Software shall support site-wise grouping, camera naming, NVR naming, and logical organization for easy identification of remote locations
32	Central Monitoring Suitability	Software shall be suitable for installation on the central workstation/server-grade system provided under this RFP
33	Mobile / Web Access	Where supported by OEM standard offering and approved by GEL, software should support secure mobile or browser-based viewing for authorized users
34	Future Readiness	Software should be capable of supporting future scale-up within the same OEM ecosystem for additional sites/devices, subject to future licensing and hardware provisions, if applicable
35	Cyber Security	Software shall support secure login, password protection, user privilege management, event logs, and applicable OEM cybersecurity features and updates
36	Documentation and Handover	Bidder shall provide installation media/download source, software version details, user manual, configuration backup, and formal OEM entitlement/usage confirmation for GEL
37	Warranty / Support	Software support shall be included as part of the overall 5-year comprehensive warranty and O&M scope for the supplied surveillance system

8.18. 8-port Indoor PoE switch with SFP

Sr. No.	Parameter	Minimum Specification
1.	Type	Managed Layer 2+ PoE Switch with Static Routing and Inter-VLAN Routing capability (Layer 3 Lite)
2.	Total Ports	- Minimum 8 x 10/100/1000 Mbps RJ-45 PoE/PoE+ ports - Minimum 2 x 1G SFP (1000BASE-X) uplink ports or 10G SFP+ uplink ports - Minimum 20 Gbps switching capacity, non-blocking for all access and uplink ports. - Forwarding rate : Minimum 14 Mpps or Better - Auto MDI/MDI-X, auto-negotiation
3.	PoE Standard	- IEEE 802.3af (PoE)/IEEE 802.3at (PoE+) - Minimum PoE power budget: 120 W
4.	Protocols	- IPv4, IPv6 dual stack support - IGMP Snooping v1/v2 support (v3 optional) - SNMP Management (v1/v2/v3) - Loop protection / Loop detection - NTP/SNTP time synchronization

5.	Access Control & Security	• Port security with MAC address limiting • IEEE 802.1X port-based access control • Basic ACLs (MAC / IP / protocol / TCP-UDP port based) • RADIUS/TACACS+ for switch security access administration • Storm control and DHCP Snooping
6.	Operating Temperature	• 0°C to +45°C or better • Humidity: 10% to 90% non-condensing
7.	Management	• Web-based GUI (HTTPS support) • Command Line Interface (CLI) via console and SSH
8.	VLAN Support	• IEEE 802.1Q VLAN tagging • Min. 256 VLAN groups or better • Support all VLAN IDs • Management VLAN • Inter VLAN Routing, Static Routing, IP Routing • Link Aggregation
9.	Spanning Tree Protocol	• IEEE 802.1D/802.1w/802.1s Spanning Tree / Rapid Spanning Tree/ MSTP
10.	MAC Address Table	• Minimum 8K MAC address entries
11.	Power Specifications	• AC Input: 100-240V, 50/60Hz • Switch with internal power adaptor • PoE power budget: Minimum 120W
12.	Physical Specifications	• Rack mountable with brackets and all required accessories included • Metal body Enclosure • LED indicators for power, link/activity, PoE status
13.	Compliance/ Certification	• BIS, CE/ FCC / UL • RoHS compliance
14.	Warranty & Support	• 5 years comprehensive OEM warranty • Regular firmware updates and security patches
15.	Documentation & Training	• Installation and configuration manual
16.	Proposed Make/Brand	
17.	Proposed Model Number	

8.19. 16-port PoE switch with SFP

Sr. No.	Parameter	Minimum Specification
1.	Type	Managed Layer 2+ PoE Switch with Static Routing and Inter-VLAN Routing capability (Layer 3 Lite)

Sr. No.	Parameter	Minimum Specification
2.	Total Ports	- Minimum 16 x 10/100/1000 Mbps RJ-45 PoE/PoE+ ports - Minimum 2 x 1G SFP (1000BASE-X) uplink ports - All required SFPs and patch cords must be included - Forwarding rate : Minimum 26 Mpps or Better - Auto MDI/MDI-X, auto-negotiation - Minimum 36 Gbps switching capacity, non-blocking for all access and uplink ports.
3.	PoE Standard	IEEE 802.3af (PoE)/IEEE 802.3at (PoE+)
4.	Protocols	- IPv4 and IPv6 support - IGMP Snooping v1/v2 support (v3 optional) - SNMP v1/v2/v3 - Loop detection / loop protection - NTP/SNTP time synchronization
5.	Access Control & Security	- Port security with MAC address limiting - IEEE 802.1X port-based access control - Basic ACLs (MAC / IP / protocol / TCP-UDP port based) - RADIUS/TACACS+ for switch security access administration - Storm control - DHCP Snooping
6.	Operating Temperature	0°C to +45°C or better - Humidity: 10% to 90% non-condensing
7.	Management	- Web-based GUI (HTTPS support) - Command Line Interface (CLI) via console and SSH
8.	VLAN Support	- IEEE 802.1Q VLAN tagging - Min. 256 VLAN groups or better - Support all VLAN IDs - Management VLAN - Inter VLAN Routing, Static Routing, IP Routing - Link Aggregation
9.	Spanning Tree Protocol	IEEE 802.1D/802.1w/802.1s Spanning Tree / Rapid Spanning Tree/ MSTP
10.	MAC Address Table	- Minimum 8K MAC address table - Static MAC address configuration (256 entries) - Packet buffer: Minimum 1MB or better
11.	Power Specifications	- AC Input: 100-240V, 50/60Hz - Switch with internal power adaptor - PoE power budget: Minimum 240W
12.	Physical Specifications	- Rack mountable with brackets and all required accessories included - Metal Body enclosure - LED indicators for power, link/activity, PoE status
13.	Compliance/Certification	- BIS, CE/ FCC / UL - RoHS compliance

Sr. No.	Parameter	Minimum Specification
14.	Warranty & Support	5 years comprehensive OEM warranty - Regular firmware updates and security patches
15.	Documentation & Training	Installation and configuration manual
16.	Proposed Make/Brand	
17.	Proposed Model Number	

8.20. 24 Port Network Layer 2 Switch

Sr. No	Specification
1	Switch Specification - Product offered must have Warranty/Support/Modules/Software/Features Activated from day 1
2	The Switch should have 24 10/100/1000Base-T ports + 4 x 10G SFP+ ports, Managed Switch.
3	RJ-45 console port for accessing the command line interface (CLI) of this switch for configuration, management, and monitoring.
4	Switch should be Forwarding mode: store and forward, Switching Capacity: 128Gbps, Packet forwarding rate: 95 Mpps and 16K MAC address table with MAC address learning and aging automatically, Static, Dynamic, filter address table Support.
5	The Switch should Support: Min IPv6 Ping, IPv6 Traceroute, IPv6 Telnet, IPv6 SSH, IPv6 SSL
6	The Switch should have Operation Temperature • 0 to 50 °C (32 to 122 °F)
7	The Switch should support for Physical stacking up to 4 units per stack with dedicated Stacking Ports and support long-distance stacking over fiber or VSS with support up to 4 Switches in single
8	The Switch should support Management features Http & Https, CLI, SNMP V1/V2/V3, LLDP, RMON, IP Source protection, Cable Diagnostic, CPU monitor, Memory monitoring, System log, Syslog
9	Spanning Tree Support STP (IEEE 802.1d) RSTP (IEEE 802.1w) and MSTP (IEEE 802.1s) protocol, Support loop protection, BPDU protection
10	The Switch should support Static routing, OSPF, RIP. DHCP Server, Client, Relay, DHCP Snooping, DHCP option 82
11	The Switch should support VLAN, 802.1Q, Support 4K VLAN, GVRP, Port VLAN, Voice VLAN and Private Vlan. Support L2 - L4 Packet filtering function, Media Access Control Protocol, Port mirroring,
12	The Switch should support Security features, Password Protection, ARP Protection, IP Sources Protection, DoS Protection, ICMP-echo, DoS protection, DHCP Snooping, DHCP attack protection, port security, port isolation, LLDP, HTTPS, SSLv3, TLSv1, SSHv1/v2, IP-MAC-Port, 802.1X AAA.
13	The Switch should support Multicast features, IGMP v1/v2/v3 Snooping, Static Multicast, Multicast VLAN, Multicast filtering, Message Statistics, Unknown Multicast Discarding.
14	The Switch should Support 8 port queue, Port Priority, 802.1p priority, DSCP priority and Support SP, WRR Priority scheduling algorithm
15	Switch should be supplied with the all necessary components like Power supply, Power cord, All Fan Module, Rack-mount kit, Installation Guide, etc. and necessary software image file to fulfil all above mention feature set from day 1.

8.21. 1 KVA UPS ONLINE UPS, Single Phase Input, Single Phase output and 30 Min. Battery Backup

Sr. No	Parameter	Description
1	UPS Rating	1 KVA True online UPS
2	Type	Online Double Conversion UPS
3	Mounting	Tower type
4	Output Power Capacity	1000 VA
5	Input Power Factor	0.99 at full load
6	Nominal Input Voltage	230V
7	Input Voltage range	160V -300 VAC at full load 110V - 300 VAC < 60% load
8	Input Frequency	50/60 Hz +/-5 Hz (auto sensing)
9	Output KW	800 W
10	Output Voltage Distortion on linear load	<3%
11	Output Voltage Distortion on non linear load	<5%
12	Output voltage regulation	230V +1%
13	Wave Form Type	Pure Sinewave
14	Crest Factor	3:1
15	Over voltage cut off Device	Required inbuilt
16	Inbuilt Surge protection	Required
17	Eco Mode	Required
18	Battery Rack & Interlinks	Supply of suitable, industry standard stand for installation & interlinks for battery connection
19	Battery Make	Exide/ Amararaja Quanta
20	Minimum Backup time on full load	30 minutes
21	Minimum VAH	1008 (12 v x Battery AH x Nos. of batteries)
22	Battery Charger Capacity	Required 10% of Battery AH
23	Temperature Compensated battery charger	Required
24	Conformal Coating	PCB conformal coating required
25	Operating Environment	0 - 40 °C
26	Protection	Short circuit, Over temperature, DC low/High, Overload
27	Certification	BIS, ROHS, CE required
28	EMC	EN 62040 -2
29	Safety	IEC 62040 -1
30	Performance	IEC 62040 -3
31	Static Bypass	Inbuilt required
32	Communication	Required RS 232 & USB Com port
33	Enclosure	IP 20
34	UPS Warranty	5 years
35	Battery	1 Year

8.22. 9 U Outdoor Rack including required accessories, power strip and dressing. (Networking/Server Rack)

Sr. No.	Parameter	Minimum Specification
1.	Rack	9U ISO certified Wall mount Powder coated cabinet Lock & key, Outdoor Rack Enclosures IP55 Rated
2.	Accessories	• 1 Cooling Fan • 1 Cable Manager • 1 Equipment Placement tray • Socket Power Strip • Accessories like Nut & Bolt Set for Whole rack to mount desired Equipment. Compatible with 19-inch International Standards & ETSI Standards
3.	Warranty	5 Years OEM comprehensive Warranty with support.

8.23. Pole for Camera Mounting (If required)

Sr. No.	Parameter	Minimum Specifications
1.	Pole type	Hot Dip Galvanized pole. The pole should be made as per IS and shall be coated with Hot Dip Galvanizing as per IS: 4759, IS:2629, IS: 2633. Fabrication with Silver coating of 86 micron as per IS:2629 in accordance with IS-2713 (1980). Fabrication should have been carried out by OEM itself and at their factory location only.
2.	Height	4-7 Meters (or higher), as-per-requirements for different type of cameras & Site conditions. Height of pole will be finalized during the feasibility study.
3.	Pole Diameter	Min 70 mm Top Dia x 135 mm Bottom Dia x 4 mm thickness with suitable size of Base Plate (Bidder to choose larger diameter for higher height). Bidder may be required to amend the pole diameter based on the structural design proposed by the authorized structural engineer to sustain 150 KMPH of wind speed
4.	Cantilevers	Cantilever arm length of minimum 1.5-meter (if, required) Design must be finalized during the initial phase of the project.
5.	RCC Foundation	Casting of Civil Foundation with GI foundation bolts (Must be corrosion free), to ensure vibration free erection (basic aim is to ensure that video feed quality is not impacted due to winds in different climatic conditions). The pole with cantilever should be strong enough to cater to the weight of 2 – 3 cameras mounted on it. Bidder must install 40 mm diameter pipe in the foundation.
6.	Protection	Lightning arrester shall be provided, to protect all field equipment mounted on pole.

<i>Sr. No.</i>	<i>Parameter</i>	<i>Minimum Specifications</i>
7.	Junction Box	SI to provide suitable size of junction box for termination of cables as per their proposed solution
8.	Cabling	All wiring must be hidden, through tubes/pipes. No wires shall be visible from outside.
9.	Earthing	Separate Earthing as per IS standard provided for each mounting structure and lighting arrester. Earthing related design should also be part of the structural engineer certificate.
10.	General	SI is required to submit the detailed design of the pole with complete foundation approved by Government approved structural engineer. The actual design of pole and foundation will be based on structure stability report issued by structural engineer. It should withstand 150 KMPH of wind speed. Pole's design should be vibration free and should not affect the performance of the system on account of any vibration on the pole.
11.	Mounting	Junction box should be mounted on the pole itself to cater to the Network switch, MCB, Fiber Distribution panel etc. in it. Bidder to propose required design for the same before placing an order to the OEM.
12.	Warranty	5 Years of Comprehensive Warranty from OEM
13.	Specify the proposed Make	
14.	Specify the proposed Model No	

8.24. 32 MM HDPE Pipe

Sr. No.	Parameter	Specification
1	Colour of the duct	Colour of the duct - Bright green, Orange, Black
2	Outside diameter	32.0 mm (Tolerance + 0.4 mm - 0.0 mm)
3	Wall thickness	2-3.5 mm (Tolerance + 0.20 mm)
4	Additional quantity of end plug for each	0
5	Additional quantity of cable sealing plug	0
6	Additional quantity of end cap for each	0
7	Additional quantity of Duct cutter for	1
8	Additional quantity of C spanner for each	1
9	Additional quantity of chamfering tool for	1
10	Optional: Pre-installed rope for the above standard	Not applicable
11	Availability of Test Report from Central Govt. LAB /	No

12	Test reports to be furnished to buyer on demand, if claimed to be available Hint- Not applicable if Test Report is not available	No
----	---	----

8.25. 50 MM HDPE Pipe

1	Colour of the duct	Colour of the duct - Bright green, Orange, Black
2	Outside diameter	50.0 mm (Tolerance + 0.4 mm - 0.0 mm)
3	Wall thickness	2-5 mm (Tolerance + 0.20 mm)
4	Additional quantity of end plug for each	0
5	Additional quantity of cable sealing plug	0
6	Additional quantity of end cap for each coil	0
7	Additional quantity of Duct cutter for	1
8	Additional quantity of C spanner for	1
9	Additional quantity of chamfering tool	1
10	Optional: Pre-installed rope for the above standard	Not applicable
11	Availability of Test Report from Central Govt. LAB /	No
12	Test reports to be furnished to buyer on demand, if claimed to be available Hint- Not applicable if Test Report is not	No

8.26. Power Cable

Sr. No.	Specification
1	3 Core, Conductor size: 2.5 sq mm) suitable for single phase 230V AC supply/ DC supply.

8.27. CAT 6 UTP Cable

Sr. No.	Parameter	Specification
1	Type	Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2 & ISO/IEC 11801
2	Conductors	23 AWG solid bare copper
3	Insulation	High Density Polyethylene
4	Jacket	FR PVC

5	Pair Separator	Cross-member (+) fluted Spline
6	Operating temperature	-10 °C to +65 °C
8	Frequency	Tested up to Minimum 250 MHz
9	Packing Box	305 Meters/Box
10	Cable Outer Diameter	6.3 +/- 0.4 mm
12	Bend Radius	4 * Cable Diameter
13	Impedance	100 Ohms + / - 15 ohms, 1 to 250 MHz
14	Mutual Capacitance	5.6 nF MAX /100 Mtr
15	Conductor Resistance	73 Ohms Max / KM nominal
16	Propagation Delay Skew	35 ns/100 Mtrs. MAX
17	Max. Tensile strength	110N
18	Standard Compliance	ANSI/TIA-568 C.2 category 6, ISO/IEC-11801, Class E/ IEC 61156-5: category 6
19	Application	IEEE 802.af and IEEE 802.3at for PoE
20	Certification	UL, CE, ETL, ETL channel tested

8.28. Cat 6 UTP Patch Cord – LSZH- 1 Mtr & 2 Mtr

No.		
1	Cable Conductor	Stranded Bare Annealed Copper
2	Wire Insulation	SFS PE
3	Jacket	Low Smoke Zero Halogen (LSZH)
4	Bend Radius	> 23 mm without load
5	Flame Test	IEC 60332-1
6	Gas Emissions testing	IEC 60754
7	Smoke Density Testing	IEC 61034
8	Conductor Resistance	< 73 Ω/km
9	Tensile Strength	96N min
10	Durability	1000 Mating Cycles
11	Propagation Delay	1-250MHz: < 25 ns/100m
12	Current rating	1.0A max
13	Insulation resistance	150 M ohm/km
14	Voltage rating	72 V DC
15	Contact resistance	20 M ohm (max) per contact
16	Length	1 meter
17	Standards Compliance	ANSI/TIA-568-C.2 and ISO/IEC-11801 (2nd Edition), IEC 61156-2, EN 50173; EN 50288-6-2 Category 6 standard
18	Application	IEEE 802.af, IEEE 802.3at for PoE applications
19	Certification	UL, CE, ETL Channel Tested

8.29. CAT6 Information Outlet and Face Plate

Sr. No.	Parameter	Specification
1	Type	Single port faceplate as per requirement
2	Material	High Impact Thermoplastic (ABS) UL94V-0 fire retardant
3	Colour	White

4	Dust protection	Spring loaded shuttered Port for Protection
5	Standards Compliance	Conforms to ANSI/TIA/EIA 568A-B.2.2001 standards
CAT 6 Unshielded Keystone Jack		
6	Material	High Impact, Flame-Retardant Plastic Compound
7	Type	Category 6
8	Insertion/Extraction life	750 cycle minimum
9	Jack Contact Material	50μ Nickel over gold
10	Conductor Compatibility Range	22-26AWG solid cable
11	IDC Type	Dual (110 Or Krone) Type
12	Current rating	1.5A max
13	Insulation resistance	500 M ohm (min)@100 Vdc
14	Contact Resistance	20 M ohm (max) per contact
15	Retention	50N
16	Voltage rating	230 V rms max.
17	Flammability Rating	UL 94V-0
18	Safety Rating	UL1863
19	Colour Coding	As Per 568 A/B Standards
20	Standards Compliance	ANSI/TIA-568-C.2, ISO/IEC-11801, EN50173-2
21	Application	IEEE 802.af, IEEE 802.3at for PoE applications
22	Certification	UL, CE

8.30. PVC Pipe - Plain Conduits of Insulating Materials

Sr. No.	Parameter	Specification
1	Classification of Conduit	Medium Mechanical Stresses
2	Nominal Size of the Conduit, (mm)	25
3	Length (Meters)	3
4	Socket ended conduit (at one end)	Yes
5	ISI Marked	No

8.31. Network Cable Laying (Laying & Installation Charges for Cables (with or without conduit)

Sr No	Parameter	Specification
1	Suitable Conduit Pipe	Without
2	Conduit material	PVC Pipe
3	Laying location	Above Surface
4	Depth of laying in case of underground	0 centimeter
5	Number of Cables to be laid	Single Cable of any type

8.32. Laying & Installation Charges for PVC Pipe (with or without conduit)

Sr. No.	Parameter	Specification
1	Suitable Conduit Pipe	Without
2	Conduit material	PVC Pipe

3	Laying location	Above Surface
4	Depth of laying in case of underground	0 centimeter
5	Number of Cables to be laid	Bunch upto 3 Cables of any type

8.33. HDPE Pipe Laying on Wall and Underground (Soft soil and Hard Soil, digging) (in meter)

Sr. No.	Parameter	Specification
1	Conduit material	HDPE Pipe - Without
2	Laying location	Under Ground
3	Depth of laying in case of underground	90 centimeter
4	Number of Cables to be laid	Bunch up to 5 Cables of any type
Additional Specification Parameters		
5	90MM/50MM/32MM HDPE Pipe and Laying for HDPE and Asphalt Cutting / Horizontal Boaring/RCC/plaster cutting for the fiber connectivity.	

8.34. Health Management Software

Sr. No.	Specification
1	Health Management Software should be able to monitor and manage the uptime status of cameras and associated network devices remotely. Should have options for managing availability based on essential uptime status and reports pdf, excel format
2	To monitor the uptime status of the cameras from locally and remotely.
3	To monitor Down, Up, not reachable alert of IP Camera/ Workstation/ Router/ Switch/
4	Dashboard should show host statistics, total hosts, up, down, unreachable hosts, host
5	Drill down based dashboard with widgets, dark & light theme for ease of operations
6	Preconfigured and customizable dashboard view to choose different widgets & configure chart type such as radial, table, pie
7	Drill down based report schedule & availability
8	User configurable host groups and grouping based upon country/state/city
9	Manual addition of devices, bulk addition of devices and auto discovery of devices
10	Device addition tab allow users to put manual details such as latitude, longitude, parent, country, state, city, Tag, criticality & remarks
11	Should allow to activate & deactivate a device/host
12	Send alert via E-mail / SMS (Through Customer provided SMS Gateway)

9. Terms and conditions

- Vendor must provide onsite comprehensive warranty (Parts, Labour, Configuration, Software Upgrade, Updates (critical hot fixes, service packs, and major upgrades) Vendor will provide contacts of all the resources and a clear escalation matrix for the support period.
- Rack mounting, cabling, and integration with existing GEL IT infrastructure

- Once in year health check for all devices/ equipment's. Vendors can propose Industry best practices for proactive health check-up frequencies / methodologies.
- Availability of all necessary hardware and equipment's in nearby Warehouse preferably at Ahmedabad.
- 24*7 Remote monitoring & advance technical call log /part replacement for any issue
- During this period of contract period of 5 years , all upgrades for firmware, operating system upgrades , version upgrades, quick fixes and security patches to be made available to GEL at no extra cost
- All Configuration supports and new requirements related to devices must be provided, whenever required, remotely.
- Vendor must give escalation matrix with all the details as per following. there has to be minimum 3 level of escalation.

Escalation Level	Name / Team	Availability (24x7 OR 8x5 etc)	Mobile	Telephone	E-mail	Address

Bidder shall provide Five (5) years onsite comprehensive warranty support (including but not limited to Parts, Labour, Configuration, Software Upgrade, Updates etc.).

Bidder shall provide contacts of all the resources and a clear escalation matrix for the 5-year support period.

- If in case of any damages done to the power/CAT6/OFC post one year of commissioning, bidder shall undertake the required activities to restore the services at the rate identified in the SOR .

10. Delivery

Vendor shall be responsible for delivery of hardware & software both ordered at any site as per GEL requirement within 4 weeks from the date of issuance /award of Purchase order/Call out order s

11. Project Implementations

The successful bidder will implement the project strictly as per the plan approved by GEL/user department. The Bidder shall carry out cabling work at such locations as may be selected by GEL/user department within a specified period as specified in Instruction letter / LOI / Order and complete their provisional Acceptance Test to the satisfaction of GEL/user department within 10 days from the date specified. This period may be extended depending upon the fulfilment of Conditions Precedent

- Designing Phase

- Material delivery
- Installation
- Testing
- UAT
- Final acceptance
- O&M commencement

12. Service Level Agreement

Sr.	Term	Definition
a.	Network Backbone	Refers to Internet Protocol (IP) based routing infrastructure at which the System Integrator has installed network devices for city Wide Area Network
b.	Uptime	Shall mean the time period for the specified services / components with the specified technical service standards are available to the user department. Uptime, in percentage, of any component (Non-IT and IT) can be calculated as: $\text{Uptime} = \{1 - [(\text{Downtime}) / (\text{Total Time} - \text{Scheduled Maintenance Time})]\} * 100$
c.	Downtime	Shall mean the time period for which the specified services / components with specified technical and service standards are not available to the user department and excludes downtime owing to Force Majeure & Reasons beyond control of SI.
d.	Latency	Refers to the average time required for round-trip packet transfers between selected junctions/locations on the selected portions of the network backbone during a calendar month.
e.	Packet Loss	Refers to the average percentage of IP packets transmitted between selected junctions/locations during a calendar month that are not successfully delivered.
f.	Planned Network Outage	Refers to unavailability of network services due to infrastructure maintenance activities such as configuration changes, up gradation or changes to any supporting infrastructure. Details related to such planned outage shall be approved by the RMC or authorized authority and shall be notified to all the concerned stakeholder in advance (at least five working days). It is desirable that such outage shall be taken on Sundays or other Government holidays to the extent possible.

Sr.	Term	Definition															
g.	Unplanned Network Outage	Refers to an instance in which no traffic can pass in or out through which users are connects to the network Backbone															
h.	Not Keeping Manpower	Shall mean that the System Integrator does not deploy the required specified quantity and quality of manpower as per RFP or a person deployed is not reporting to the duty.															
i.	Incident	Refers to any event/abnormalities in the functioning of the Services specified as part of the Scope of Work of the System Integrator that may lead to disruption in normal operations of the surveillance system.															
j.	Response Time	Shall mean the time elapsed from the moment an incident is reported in the Helpdesk, over phone or by any applicable mode of communication, to the time when a resource is assigned for the resolution of the same.															
k.	Resolution Time	Shall mean the time taken (after the incident has been reported at the helpdesk), in resolving (diagnosing, troubleshooting and fixing) or escalating (to the second level or to respective vendors, getting the confirmatory details about the same from the vendor and conveying the same to the end user), the services related troubles during the first level escalation.															
l.	Incidence Resolution (Field)	The network outage, security or performance related issues impacting the availability/performance and leading to unavailability of the services for field devices. Resolution of incidence as per below priority levels: • L1 Level Severity: Incident impacting a large number of sites / a major batch / widespread field service availability • L2 Level Severity: Incident impacting multiple locations/sites • L3 Level Severity: Incident impacting one complete site/location • L4 Level Severity: Incident impacting one or more devices/utilities at a site without total site outage <table border="1"> <thead> <tr> <th>#</th><th>Severity</th><th>Issue Resolution Time</th></tr> </thead> <tbody> <tr> <td>1.</td><td>Level 1</td><td>12 Hours</td></tr> <tr> <td>2.</td><td>Level 2</td><td>36 Hours</td></tr> <tr> <td>3.</td><td>Level 3</td><td>48 Hours</td></tr> <tr> <td>4.</td><td>Level 4</td><td>72 Hours</td></tr> </tbody> </table>	#	Severity	Issue Resolution Time	1.	Level 1	12 Hours	2.	Level 2	36 Hours	3.	Level 3	48 Hours	4.	Level 4	72 Hours
#	Severity	Issue Resolution Time															
1.	Level 1	12 Hours															
2.	Level 2	36 Hours															
3.	Level 3	48 Hours															
4.	Level 4	72 Hours															
m.	Incidence Resolution (Central Monitoring Location)	• Level 1 Incident: Complete failure of central monitoring function and/or inability to access remote surveillance system from central location • Level 2 Incident: Major degradation of monitoring / viewing / playback /application function at central location, without complete service outage • Priority Level 3 Incident: Non-critical issue affecting part of the central monitoring setup or related allied services <table border="1"> <thead> <tr> <th>Sr. No.</th><th>Severity Level</th><th>Issue Resolution Time</th></tr> </thead> <tbody> <tr> <td>1</td><td>Level 1</td><td>Within 8 Working Hours</td></tr> <tr> <td>2</td><td>Level 2</td><td>Within 24 Hours</td></tr> <tr> <td>3</td><td>Level 3</td><td>Within 72 Hours</td></tr> </tbody> </table>	Sr. No.	Severity Level	Issue Resolution Time	1	Level 1	Within 8 Working Hours	2	Level 2	Within 24 Hours	3	Level 3	Within 72 Hours			
Sr. No.	Severity Level	Issue Resolution Time															
1	Level 1	Within 8 Working Hours															
2	Level 2	Within 24 Hours															
3	Level 3	Within 72 Hours															

Sr.	Term	Definition												
		Note: Incidents may be logged through email, telephone, helpdesk, or any GEL-approved complaint mechanism. The bidder shall provide status updates to GEL until final closure. Root cause analysis may be required by GEL for major or repeated incidents.; if root cause is not identified then additional penalties may be levied.												
n.	Request Resolution (Central Monitoring Location)	- Priority Level 1 Incident: Urgent request affecting active monitoring or critical operation - Priority Level 2 Incident: Important request not causing complete service outage - Priority Level 3 Incident: Routine request / administrative support request <table border="1"> <thead> <tr> <th>Sr. No.</th><th>Severity Level</th><th>Request Resolution Time</th></tr> </thead> <tbody> <tr> <td>1</td><td>Level 1</td><td>Within 8 Working Hours</td></tr> <tr> <td>2</td><td>Level 2</td><td>Within 24 Hours</td></tr> <tr> <td>3</td><td>Level 3</td><td>Within 72 Hours</td></tr> </tbody> </table> Note: Requests may be logged through email, telephone, helpdesk, or other GEL-approved mechanism. The bidder shall resolve the request and provide status updates until closure.	Sr. No.	Severity Level	Request Resolution Time	1	Level 1	Within 8 Working Hours	2	Level 2	Within 24 Hours	3	Level 3	Within 72 Hours
Sr. No.	Severity Level	Request Resolution Time												
1	Level 1	Within 8 Working Hours												
2	Level 2	Within 24 Hours												
3	Level 3	Within 72 Hours												
o.	Availability of application and software	Application and software include VMS, etc.												
p.	IT components in Central Locations	Workstations, Network Switch, UPS etc.												
q.	End devices	PTZ Camera, Outdoor camera, Indoor camera, NVR, viewing monitor etc.												
r.	Network switch	Network switch, etc.												
s.	Video feed quality	Bad feeds due to Video Jitter, dim, blurred, unfocused, obstructed, nonaligned feeds												

13. Penalty Terms:

Sr. No.	Activity	Penalty
1	Delay in Supply / Delivery of Materials	If the bidder delays delivery/supply of materials beyond the approved timeline for reasons attributable solely to the bidder, GEL may impose 0.5% of the value of delayed / non-delivered item(s) per week or part thereof. The penalty shall be subject to the maximum aggregate delay penalty cap as per contract conditions. If the delay is excessive and unacceptable, GEL may impose additional penalty / GEL may terminate the corresponding scope /

		order and take action as per contract, including forfeiture / invocation of PBG, wherever applicable.
2	Delay in Installation / Commissioning	If the bidder delays installation, implementation, commissioning, or acceptance readiness beyond the approved timeline for reasons attributable solely to the bidder, GEL may impose 0.50% of the value of delayed site / work-order portion per week or part thereof. The cumulative delay penalty for implementation shall be capped at 10% of the corresponding delayed work-order / site value.

Note: Maximum Penalty cap for penalty for delay is 10% of contract value for the total contract value.

If GEL fails to provide space and related clearances to carry out the job as per the agreement terms, as a result of which the installation of the equipment is delayed and the selected agency is not able to adhere to the schedule for completing the Acceptance Tests. Delay solely on account on above will not be accounted while ascertaining actual delay and penalties thereof.

Note: For calculation of delay any dependencies from User Department

OPERATIONAL PENALTIES: Successful Bidder shall be paid Quarterly Payment (QP) for the O&M services being provided by the successful bidder. The overall operational penalty would be generally capped at 10% of QP amount and will be recovered against the quarterly payment invoice and Performance bank guarantee (if required) submitted by the successful bidder. Availability will be calculated on a quarterly basis.

S/N	SLA	Target	Penalties
1.	Time Line for Retrieval of video feeds from the Storage	As per SLA	• Rs. 500 for every instance of late retrieval as per the SLA • Note: Data Retrieval Request Through a Request Log Mechanism
2.	*Uptime of all IT components installed at site	99.50% (at each individual component level)	For each component • 99.50 - 99.00%- 0.25% of QP; • 98.99 - 98.00% -0.5% of QP • 97.99 - 97.00%-1.0% of QP • 96.99 - 96.00%-1.5% of QP • Less than 96.00%- 2% of the QP • If the uptime goes below 95% consequently for two quarters, then in that case GEL may terminate the contract and forfeit the PBG.

up time mentioned here is required to achieve for each site components.

Complaint resolution: The bidder shall be responsible for maintaining the desired performance and availability of the Network devices supplied under the scope of work of this RFP. The bidder should ensure the prompt service support during Contract period. If complain is made before 4 pm of the working day, the same should be attended on the same day.

File No: GEL-IT & ERP-2026-7-187580

Resolution Time: - Defined as time taken to resolve a problem. The resolution time will be considered with respect to clock hours. If the successful bidder fails to attend the uptime and complaint resolution as specified above, the operational penalty will be imposed as specified above which will be recovered from quarterly payment or from PBG

Penalty for delay in repair/replacement of faulty material: The Successful Bidder shall be responsible for repair/ replace all faulty material within the shortest possible time thus ensuring minimum downtime.

- The Successful Bidder shall be responsible for maintaining the desired performance and availability of the system/services. Successful Bidder should ensure the prompt service support for the entire project duration. If any complain is Register by Customer by mail or Telephonic Official Number then it has to resolved within 3 working Days from the time of complaint raised
- If Successful Bidder fails to resolve the issue as specified above, the following penalty will be imposed on each delayed day, which will be recovered against the quarterly payment invoice submitted by the successful bidder:

Sr. No.	Activity / SLA Parameter	SLA Requirement	Penalty / Action
1	Quarterly Preventive Maintenance	PM shall be carried out at every live site once in each applicable quarter	If PM is not carried out, GEL may withhold the O&M payment for that site/quarter and/or impose deduction/service credit and/or record repeated non-compliance for further contractual action
2	Complaint / Fault Resolution	Complaints including hardware, software, configuration, recording, viewing, ANPR, NVR, switch, UPS, and related system faults shall be resolved within 72 hours for HO / District / critical locations and within 150 hours for remote locations	Rs. 500 per complaint per day or part thereof beyond SLA timeline
3	Chronic Fault / Replacement	If any faulty equipment cannot be repaired within SLA or repeatedly fails, the	GEL may direct mandatory replacement. Continued non-compliance may attract recovery from pending payment / retention

Sr. No.	Activity / SLA Parameter	SLA Requirement	Penalty / Action
		bidder shall replace the same at no additional cost	/ PBG and further contractual action

14. Payment Terms

- Bidder should send all of their invoice via GEL vendor portal for invoice processing with digital Signature.
- The GST should be indicated separately as per the Commercial Bid Form.
- Bids shall be quoted and payment shall be made in Indian Rupees only for the services
- Invoice must be generated with IRN & Digital signature.
- Invoice must be generated in Monthly / quarterly UOM (Unit of measurement) and as per GEL requirement.
- No payment shall be made to the vendor until Performance BG is submitted and duly verified with the Issuing Bank by GEL.
- The bidder may raise invoices on a quarterly basis in arrears and payment will be released on a quarterly basis, upon satisfactory delivery of the services for the said period, subject to any penalty levied on the supplier with the confirmation from Engineer- In – Charge.
- No additional payment apart from the tender bid value will be done under any circumstances.
- All payments will be made by adopting electronic clearing system and electronic fund transfer.
- Deduction of Income Tax, Goods and Services Tax and other applicable statutory duties would be as per the extant laws.

Indicative payment terms

Sr. No.	Milestone for Implementation	Payment Schedule	Indicative Timeline	Deliverables
1	Placement of call-out order by GEL for one or more locations		T1	
2	Submission and approval of site survey reports	10% of batch-wise	T1 + 15 Days	Site survey report, camera layout, cable route plan, power/network plan, storage and bandwidth calculations, final site-specific BoQ
3	Delivery of approved material for released batch	40% of batch-wise SITC value	T1 + 2 Months	Delivery challan, material verification/inspection sign-off, batch-wise material receipt record
4	Successful installation, configuration, recording setup, commissioning, and verification of live view from	30% of batch-wise SITC value	T1 + 1 Month	Installation report, commissioning report, configuration report, central live view verification report,

Sr. No.	Milestone for Implementation	Payment Schedule	Indicative Timeline	Deliverables
	site and central location for released batch			remote playback verification report, training completion report
5	Closure of observations/punch points and successful final acceptance test for released batch	10% of batch-wise SITC value	T1 + 1 Month	Observation closure report, final acceptance test sign-off, handover documents
6	Retention / hold amount	10% of batch-wise SITC value	T1 + 1 Year	To be released after 1 year from batch final acceptance, subject to satisfactory performance and no pending defect/liability

15. Defect Liability: Not Applicable.

16. CPBG: Applicable as per GEL terms and condition.

17. QHSE REQUIREMENTS

SCOPE AND APPLICATION

Contractor/Service providers are the key stakeholder and an integral part of Gujarat Gas Ltd (GEL's) business. Contractors'/Service provider' Quality, Health, Safety and Environment (QHSE) performance reflects on the company's business performance and reputation. GEL has established QHSE Management Systems, Procedures & Guidelines to ensure compliance with GEL's QHSE requirements. These requirements apply to all jobs whilst conducting work for GEL including; Project, Construction, Operation & Maintenance, Field Operations and Services within any given contract or agreement.

The overall objective of QHSE management in contract/agreement is to improve the company and Contractor's/Service providers' QHSE performance in all aspects of activities. Active and on-going participation by both the GEL and Contractor/Service provider is essential to achieve this objective.

RESPONSIBILITIES

It is responsibility of GEL management and staffs to ensure that all Contractors/Service providers work under their direction & control are provided with relevant Integrated Management System (IMS) Policies, Procedures & Guidelines that describe the GEL requirements for undertaking work within the company. It is also the responsibility of Contractors/Service providers to ensure that their staff are informed of and comply with GEL's requirement whilst working for the company.

GEL HSE department provides advice and assistance on QHSE requirements across the complete spectrum of all work activities. Contract Owner (Department Head) and Contract Holder (Work in-charge) are responsible to ensure safe execution of work/service include the following:

1. Ensuring that the QHSE Policy, Procedures & Guidelines are known and understood by all contractors'/service providers' staff and work force
2. Monitoring, Inspecting & Auditing execution of work, activities to ensure adherence to the QHSE compliance requirements.

The Contractors'/Service provider' will take the responsibility for implementation of GEL's QHSE Policy, Procedures, Guidelines and other requirements with the advice and support of the GEL's Contract Owner / Contract Holder and HSE representative.

Contractor/Service provider to ensure that all aspects relating to QHSE are adequately addressed and implemented in accordance with the GEL QHSE requirements and QHSE Management Plan, which shall include the management processes and activities to be implemented during the course of work with GEL.

Contractor/Service provider shall be responsible for ensuring that adequate HSE resources are put in place to enable satisfactory implementation of QHSE Management Plan.

This responsibility also applies to ensure the Health and Safety of the people are directly and indirectly engaged / involved whilst working or present at GEL's work area / sites.

EXECUTION

1. Contractor/Service provider is responsible to ensure the compliance with GEL QHSE requirements. GEL overall QHSE performance is directly influenced by the contractors' performance.
2. Contractor/Service provider is responsible for QHSE compliance monitoring at site/work activities to ensure that work/activity is performed in a safe manner. Moreover, they are responsible for reporting of all incidents, Hazard and Near Miss that might happen during work/activity
3. Contractor/Service provider shall follow and comply with GEL "Work Permit" system During work execution and activities, GEL team will regularly monitor and evaluate the performance of the Contractor/Service provider to identify the shortfalls and weaknesses and assist to improve the overall performance including QHSE performance through CPAR process (as applicable)
4. We believe that everyone at GEL, Employees, Contractors, Service providers and Associates have the right to go home safely to their families.

QHSE Defaults and Penalties (As applicable)

SN	Description	Penalty amount (will be decided by Contract Owner)
1	Lost Time Injury	Rs. 5000/Instance
2	Non-compliance - HSE Engineer	NA
3	Un authorized work	NA
4	Work without PtW/WA	NA
5	Non-compliance - Safety Training Card (STC)	NA
6	Non-compliance - Health Check up	NA
7	Non-compliance - PPEs	NA

Remark: Issuance of MEMO against HSE non-compliances including above-mentioned defaults shall be decided by Contract Holder

QHSE GUIDELINE (AS APPLICABLE) FOR ALL TYPE OF CONTRACTS

- Contractor/Service provider...
 - a) Shall ensure that all staff/work force comply with the requirements of the GEL HSE Management System, QHSE policy, standard, procedures, guideline, plan & Life Savers at work site
 - b) Shall ensure issuance of Identity Card to their team members
 - c) Shall apply and obtain Permit to work (PTW/WA) before start of the work
 - d) Shall arrange work related Personal Protective Equipment (PPEs) for their staff/work force and ensure proper use during the execution of job
 - e) Shall carry out the work within the duty hours/office hours. No Work shall be carried out without permission of GEL's representative beyond the official duty hours unless otherwise agreed upon prior to start of work and recorded appropriately
 - f) Shall ensure that all tools, tackles, appliances, machines, vehicles, instruments or other equipment are Fit for Purpose and maintained safe working condition at all times and are used only by authorized and competent persons
 - g) Shall ensure that all the QHSE requirements are properly discussed for any sub-contracted activities with GEL. No such activity shall be performed without clearance from GEL management
 - h) Shall ensure that all Hazards, Near miss, accident, incident, injuries are reported promptly to GEL. Action arises due to reported Hazards, Near miss, incident investigation; audit/inspection shall be closed out as per agreed timelines with site in-charge
 - i) Shall deploy staff & work force trained, qualified and competent for the work and well aware of risks and mitigation action/s for the activities undertaken
 - j) Shall make necessary arrangements for safe custody of equipment, materials in stores/warehouse and at site shall ensure safe transportation, Internet proxy solution and handling of materials to prevent any damage, which may impair safe performance of the equipment / material etc.
- Shall initiate immediate actions to hospitalize injured person(s)

- k) Shall ensure an injury free, incident free workplace and protect people from harm caused by work activities
- l) Shall ensure use of seatbelts while driving four-wheeler and use of crash helmet for Two wheeler riders during job execution
- m) Shall ensure Lock out and Tag out (LOTO) after de-energizing and double check before starting any jobs. In case of conducting job for the purpose of fault finding & monitoring of voltage & current it is to be considered live working and all PPE'S to be worn to avoid exposure of flash arc current
- n) Shall take note that the use of open wires in sockets, use of wires with tape joints shall not be accepted at work site.
- o) Shall ensure proper collection, Network devices and disposal of solid / liquid waste as per GEL procedure and guideline
- p) Staff/work force shall not smoke or resort to misuse of drugs, medicines or alcohol while on duty
- q) In case of any incident like fire, gas leakage etc. due to gross negligence of the Contractor's staff/work force, GEL reserves the right to impose penalty up to actual damage cost and or termination of work order depending upon the gravity of the situation.
 - Any breach of the QHSE requirements shall be deemed by the company to be a material breach of the terms & condition of the contract. GEL shall be entitled to take appropriate actions including instructing the contractor to (a) remedy the breach; (b) suspend the work or (c) terminate the contract.

All activities shall be carried out as per GEL's documented procedures and QHSE requirements; deviation from it shall be dealt with very strictly.

Contractor shall ensure that all tools, appliances, machines, vehicles or other equipment, are in safe working condition

- All activities shall be carried out as per GEL documented procedure and HSE requirement, and deviation from it shall be dealt with very strictly.