

3. SCOPE OF SUPPLY, SCOPE OF WORK AND SPECIFICATION

3.1 Scope of Supply by CPSTL

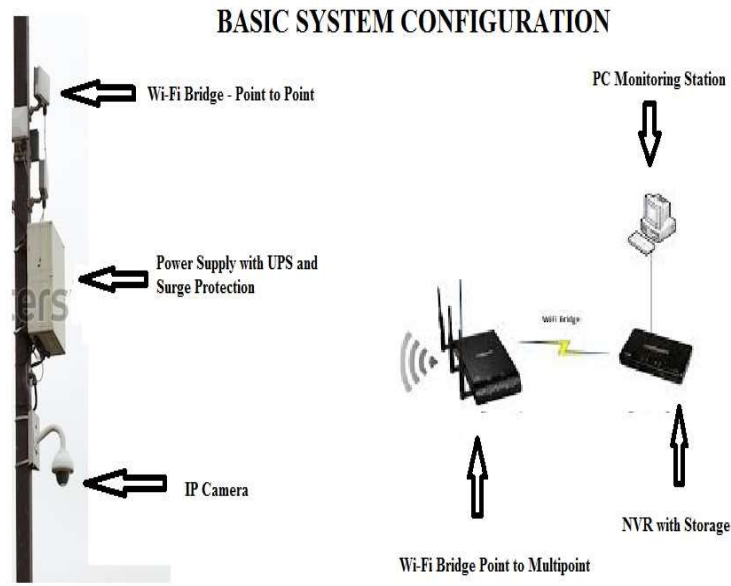
- 3.1.1. CPSTL shall assist the contractor in defining field of view and identifying suitable camera mounting locations.
- 3.1.2. CPSTL shall release operational areas such as pump houses, filling gantries access roads and tank yards etc. for Wireless CCTV System installation work in a manner such that minimum disturbance to the operational activities of CPSTL.
- 3.1.3. Electricity and drinking water that would be supplied to the contractor to undertake this work would be charged from the contractor per meter readings/ estimate. The perspective contractor is required to indicate his requirements of power from the CPSTL in his offer for evaluation purposes. Or the contractor shall arrange his own source of electricity and water.

3.2. Contractor's Scope of Supply

Outdoor IP Cameras, Indoor/Outdoor Wireless Transmitters & Receivers, NVR, Monitoring stations, UPSs, power supply systems and cabling, Surge protection systems and earthing, Construction equipment, materials, consumables and other documents as follows

- 3.2.1. Supply of construction equipment required for civil works to install camera mounting poles.
- 3.2.2. Supply of all testing and installation equipment such as cable testers, signal strength testers, earth resistant testers and other instruments to perform necessary inspection and testing.
- 3.2.3. Supply of Fixed type and PTZ type outdoor IP cameras with Wi-Fi and Ethernet connectivity as per specifications
- 3.2.4. Supply of monitoring and controlling workstations as per specifications
- 3.2.5. Supply of Network Video Recorder (NVR) as per specification
- 3.2.6. Supply of Video storage system as per specifications.
- 3.2.7. Supply of UPS units as per specifications.
- 3.2.8. Supply of poles for mounting cameras as per specification.
- 3.2.9. Supply of Wi-Fi Bridges Point to Point/Multi Point as per the system requirements
- 3.2.10. Supply of switchgears and cables etc required for providing power supply for cameras, Access switches, work stations, monitors and UPS units
- 3.2.11. Supply of surge protection system to protect cameras, wireless transmitters & receivers, storage equipment, work stations, and UPS units from surge voltages in both power and data lines.
- 3.2.12. Supply of earth grounding system as per specifications.

3.2.13. The Basic System Configuration shall be as per the below diagram



3.3. Contractor's Scope of Work

- 3.3.1. Contractor shall submit a comprehensive proposal with the bid to cater the requirements mentioned in scope of work and specifications. Contractor shall include in his proposal, the systems, equipment, instruments and methodologies which he deems that shall incorporate to improve the quality and effectiveness of the wireless IP based camera system.
- 3.3.2. Inspection of the proposed camera locations, Wi-Fi Bridges mounting locations, cabling routes, power supply sources and requirements.
- 3.3.3. Make and manufacture of Outdoor IP Cameras, NVR, Video Storage & Management equipment, Wi-Fi Bridges, UPS units, Surge protection units switchgears, other accessories to be submitted with the bid.
- 3.3.4. General layout of finalized location of Outdoor IP cameras, Wi-Fi Bridges, Control and monitoring stations, data and power supply cable routes shall be submitted to the approval of the engineer before proceeding with installation work.
- 3.3.5. Construction drawings of cable sleeves and mounting poles shall be submitted to the approval of the engineer before proceeding with the construction work.
- 3.3.6. Supply and Install Cable Network
 - i. All the cable in the field shall be installed underground cable ducting.
 - ii. All the outdoor cables shall be armored type.
 - iii. Steel conduits shall be used at outdoor locations where un-armored cables are required
 - iv. Cables inside the buildings shall be routed through white color PVC casings.
- 3.3.7. Supply and Install Outdoor IP Cameras with Wireless Signal Transmitting.

- i. Contractor shall provide a schedule of cameras to be used at proposed locations the specifications shall comply with the requirements mentioned in the bidding documents. The proposed cameras shall be able to provide a clear view of the locations mentioned in the camera layout in all weather conditions during day time and night time
- ii. Installation shall be done after obtaining the approval for the schedule of cameras.
- iii. Contractor shall design supply and install suitable mounting poles and brackets for wireless outdoor IP cameras.
- iv. Contractor shall install, test and commission the wireless IP based cameras.

3.3.8. Supply and Install Network Video Recorder and Video Storage System.

- i. Contractor shall supply, install, test and commission a Network Video Recorder (NVR) complying with the requirements mentioned in the bidding documents.
- ii. Assisted Storage which is capable of retaining a recording of 45 days image for all the cameras.
- iii. Contractor shall supply and install, test and commission all the software's Firm wares and user license to operate the system.

3.3.9. Supply and Install video Monitoring Stations.

- i. Contractor shall supply and install test and commission two (02) PC monitoring stations with 19" monitors at separate locations specified by engineer.
- ii. Each station shall have a joystick for controlling.

3.3.10. Wi-Fi Bridges Point to Point / Multipoint.

- i. Contractor shall supply, install, test and commission required Wi-Fi Bridges Point to Point/Multipoint complying with the requirements mentioned in the bidding documents.
- ii. Contractor shall supply and install the required mounting racks, enclosures, and power supply & surge protection system for the proposed Wi-Fi Bridges.
- iii. The Wi-Fi Bridges can be mounted either on the camera poles itself or in the nearest indoor building. Depending on the location the video signals from the cameras

3.3.11. UPS units.

- i. Contractor shall select, supply and install, test and commission required UPS units to power the NVR, Wi-Fi Bridges, and Wireless IP based Cameras
- ii. Contractor shall supply and install the required power supply system for UPS units.

3.3.12. Surge Protection System

- i. Contractor shall design for supply and install, test and commission required surge protection system
- ii. The surge protection system shall cover all the equipment for lightning and high voltage surges coming through power supply network and Data network.
- iii. Contractor shall design supply and install earth grounding system.

3.3.13. Contractor shall carryout testing and commissioning of the complete system

- 3.3.14. Contractor shall provide training for CPSTL staff to on trouble-shooting, maintenance and operation of the system. The training shall cover the engineering training and operator training for the system offered.
- 3.3.15. Contactor shall enter comprehensive annual maintenance agreement including required manufacture recommended spares, with CPSTL after the warranty period is expired. The charges for such maintenance agreement shall be provided.

3.4. Minimum Technical Specifications

The technical specifications listed below are a guide to the bidder to design the system proposed. Bidder shall not be limited to the specifications mentioned.

3.4.1. Outdoor Fixed IP Camera With Wi-Fi and Ethernet Connectivity

#	Item Description	Minimum Required Specifications
1.	Camera Type	True IP, High Performance, Day & Night Color Weather Proof Bullet Camera
2.	Imaging Device	CMOS/CCD
3.	Resolution	1920x1080 or better
4.	Lens	Auto Iris, Auto Focus
5.	Min Obtainable Field of View	Wide angle 130 ⁰
6.	Minimum Illumination	Color Mode: 0.5 lux , B/W Mode : 0.04 lux
7.	Frame Rate	Up to 25/30 fps or better
8.	Back Light Compensation	Automatic, Manual
9.	White Balance	Automatic, Manual
10.	Connectivity	Wi-Fi and RJ45
11.	Enclosure	Outdoor Weatherproof (IP66-, IK10- and/or NEMA 4X-rated)
12.	Mounting Pole	Suitable steel mounting pole shall be supplied and installed
13.	Warranty	03 Years manufacturer's warranty and Support
14.	Certificates	Certificates conforming to relevant latest EN/UL/IEC
15.	Brand & Model	Should be brand from a reputed company with local presence.
16.	Country of Origin	Specify the Country of origin
17.	Country of Manufacture / Assembled	Specify the country where manufactured (assembled) in.

3.4.2. Outdoor PTZ IP Camera With Wi-Fi and Ethernet Connectivity

#	Item Description	Minimum Required Specifications
1.	Camera Type	True IP, High Performance, Day & Night Color Weather Proof PTZ Camera
2.	Imaging Device	CMOS
3.	Resolution	1920x1080 or better
4.	Lens	Auto Iris, Auto Focus
5.	Zoom	30x optical zoom and 12x digital or better
6.	Minimum Illumination	Color Mode: 0.5 lux , B/W Mode : 0.04 lux
7.	Frame Rate	Up to 25/30 fps or better
8.	Back Light Compensation	Automatic, Manual
9.	White Balance	Automatic, Manual
10.	Connectivity	Wi-Fi and RJ45
11.	Enclosure	Outdoor Weatherproof (IP66-, IK10- and/or NEMA 4X-rated)
12.	Mounting Pole	Suitable steel mounting pole shall be supplied and installed
13.	Warranty	03 Years manufacturer's warranty and Support
14.	Certificates	Certificates conforming to relevant latest EN/UL/IEC
15.	Brand & Model	Should be brand from a reputed company with local presence.
16.	Country of Origin	Specify the Country of origin
17.	Country of Manufacture / Assembled	Specify the country where manufactured (assembled) in.

3.4.3. Wi-Fi Bridge Point to Point / Multi Point

#	Item Description	Minimum Required Specifications
1.	Type	Long Distance Wi-Fi Bridge Point to Point/ Multi Point
2.	Input	Shall support camera signal 3G/HD/SD-SDI,HDMI
3.	Output	Shall support NVR input 3G/HD/SD-SDI,HDMI
4.	Maximum transmission	Propose according to the system requirements
5.	Frequency Band	Shall comply with TRC regulations
6.	Auxiliary Requirements	System shall be supplied with all the other network hardware requirements such as POE switches as required.
7.	Warranty	3 Years Manufacturer's Warranty and Support
8.	Brand & Model	Should be brand from a reputed company with local presence.
9.	Country of Origin	Specify the Country of origin
10.	Country of Manufacture / Assembled	Specify the country where manufactured (assembled) in.

3.4.4. Network Video Recorder (NVR) System

#	Item Description	Minimum Required Specifications
1.	Type	Wireless Network Video Recorder
2.	Input	Shall support camera & Transmitter signal 3G/HD/SD-SDI,HDMI WiFi/RJ45
3.	Output	Shall support camera & Transmitter signal 3G/HD/SD-SDI,HDMI WiFi/RJ45
4.	Storage	Hard Disk / USB HDD / Network Storage Storage which is capable of retaining a recording of 45 days at 15 FPS in 2 Megapixel (minimum) image for all the cameras
5.	Frequency Band	Shall comply with TRC regulations
6.	Video Resolution	1080P
7.	Video Play Back	10 Channel Simultaneous Playback
8.	Camera License	10 Nos. camera license shall be provided with the system
9.	Auxiliary Requirements	System shall be supplied with all the other required auxiliary hardware such as POE switches, as required.
10.	Warranty	3 Years Manufacturer's Warranty and Support
11.	Brand & Model	Should be brand from a reputed company with local presence.
12.	Country of Origin	Specify the Country of origin
13.	Country of Manufacture / Assembled	Specify the country where manufactured (assembled) in.

3.4.5. Work Station for Video Monitoring

#	Item Description	Minimum Requirement
1.	Type of Workstation	Desktop Workstation
2.	Processor	4th Gen Intel® Core i7 or better
3.	Internal Memory	8 GB RAM Minimum
4.	VGA	Professional Graphics Card (E.g. NVIDIA or ATI) with Minimum 2GB dedicated Video RAM, GPU with more than 400 cudacores, Minimum 2 HDMI ports
5.	Operating System	Windows 7 Professional or better
6.	Storage	250GB or more SSD
7.	Removable Storage	DVD±RW / USB 3.0
8.	Network Interface	2 Gigabit Ethernet RJ-45 (1000Base-T)
9.	Auxiliary Interfaces	2 USB 3.0, USB 2.0
10.	Power Requirements	240 VAC / 50-60Hz
11.	Monitor	19"
12.	Key Board/Joy Stick	Keyboard with joysticks for each client workstation shall be provided for PTZ control.
13.	Warranty	3 Year manufacturer's warranty & support
14.	Brand & Model	Should be brand from a reputed company with local presence.
15.	Country of Origin	Specify the Country of origin

3.4.6. Uninterruptible power supply

#	Item Description	Minimum Required Specifications
1.	Capacity	Bidder to mention
2.	Technology	True online double conversion
3.	230 V AC (Single Phase)	220- 240V AC
4.	Input Frequency	50 Hz ± 5%
5.	Output Voltage	230V AC
6.	Output Frequency	50 Hz
7.	Output Voltage Regulation	± 1%
8.	Wave Form	Pure Sine wave
9.	Batteries	Maintenance Free Batteries
10.	Min. Backup Time at Full load	20 minutes
11.	Bypass System	Automatic and Manual bypass
12.	Alarm	Audible alarms for faults warnings
13.	Certificate	ISO 9001
14.	Warranty	3 Year manufacturer's warranty & support
15.	Brand & Model	Should be brand from a reputed company with local presence.
16.	Country of Origin	Specify the Country of origin

3.4.7. Power distribution system

#	Item Description	Minimum Requirement
1.	Power Distribution System	Bidder shall in his proposal design for a suitable power distribution network to comply with the site conditions to power all the active components of the system.
2.	Standard to be followed	BS7671: 2008 Amendment 3:2015

3.4.8. Lightning and Surge Protection System

#	Item Description	Minimum Requirement
1.	Lightning and Surge Protection System	Bidder shall in his proposal design for a suitable lightning and surge protection system to comply with the site conditions, to protect all the active components from lightning and voltage surges inclusive of the earth grounding system
2.	Standard to be followed	BS EN/IEC 62305
3.	Brand & Model	All the switchgears, accessories and cables Should be brand from a reputed company
4.	Country of Origin	Specify the Country of origin

3.4.9. System Warranty, Post installation Support and Spare Parts& Training, Testing and Commissioning

#	Item Description	Minimum Requirement
1.	System Warranty	<p>Bidder shall provide a minimum 03 year System warranty against manufacturing defects, workmanship and performance of the Wireless CCTV system. Any defects, system breakdowns and performance failures shall be rectified and restored by the contractor under at his cost under the warranty period.</p> <p>The response time for any complain shall be less than 1 hour.</p> <p>Defect rectification shall be attended within 03 hours.</p> <p>If any repair work exceeds 24hrs duration, the faulted unit shall be replaced with a backup unit.</p>
2.	Comprehensive Annual Maintenance Contract (AMC)	<p>Contractor shall enter into a Comprehensive Annual Maintenance Contract (AMC) with CPSTL upon expiration of the warranty period.</p> <p>The AMC shall cover all the service and breakdown repairs for the Wireless CCTV system. The contractor shall maintain a stock of mandatory and operational spare parts under the AMC.</p>

		<p>The response time for any complain shall be less than 1 hour.</p> <p>Defect rectification shall be attended within 03 hours.</p> <p>If any repair work exceeds 24hrs duration, the faulted unit shall be replaced with a backup unit</p> <p>The indicative cost of the AMC shall be mentioned in the proposal</p>
3.	Spare Parts	Bidder shall provide a list of mandatory and optional spare parts with their cost with the proposal
4.	Manufacturer's Authorization Letter	Bidder shall provide the manufacture's Authorization letters to represent the brand in Sri Lanka, for each of the critical components (such as Cameras, wireless transmitters, NVR, Client viewing stations, UPS etc.) he has provided in the proposal
5.	Operational and maintenance staff training	Contractor shall provide a training of operational and maintenance of the Wireless CCTV system for the Operational and Maintenance staff of CPSTL at the site.
6.	Testing and Commissioning	Bidder shall provide a testing and commissioning plan in his proposal clearly indicating all the parameters to be tested against the expected outcomes as per the relevant standards.