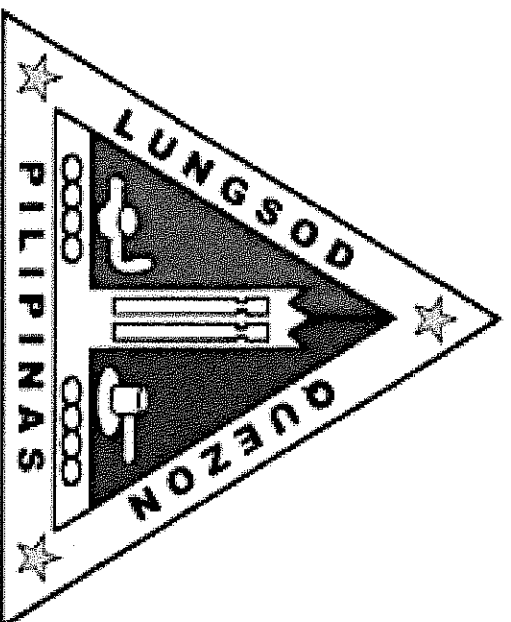


TERM OF REFERENCE

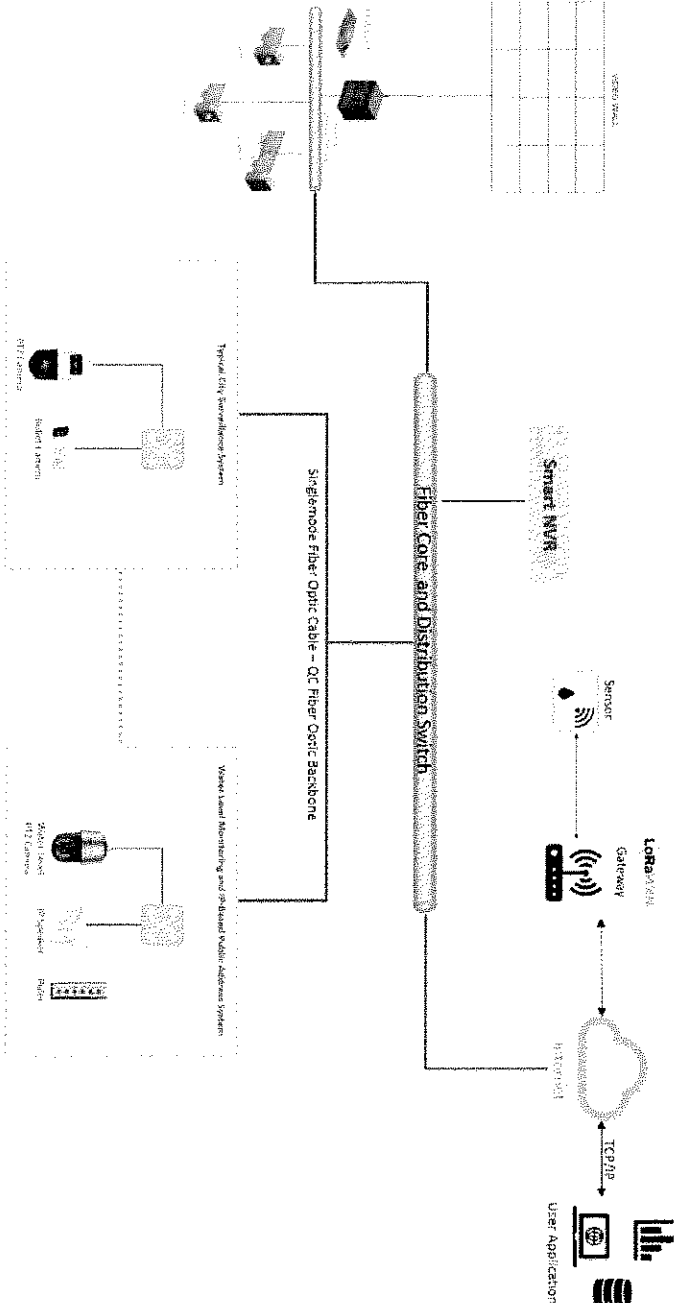
TECHNICAL SPECIFICATIONS

LOCAL GOVERNMENT OF QUEZON CITY

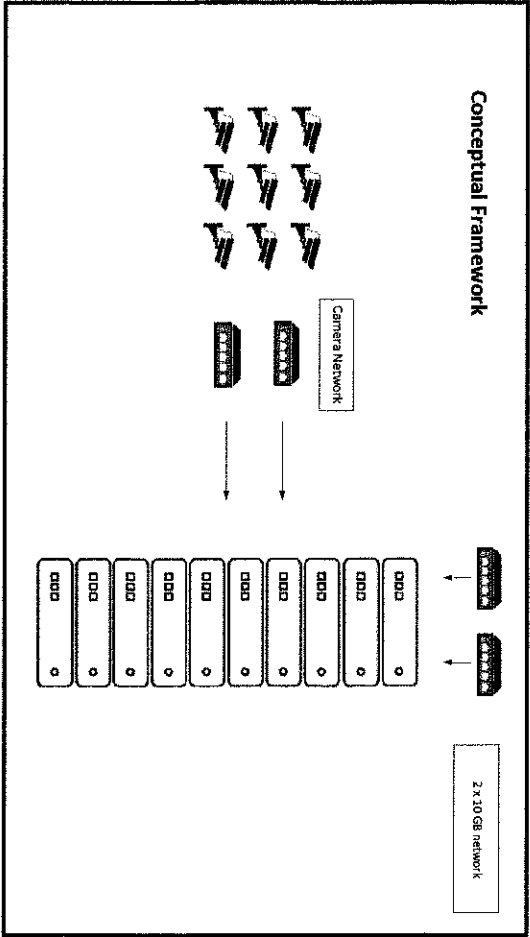


**Design, Supply, Delivery, Installation, Testing and Commissioning
of QCDDRRMO Surveillance System**

SURVEILLANCE SYSTEM CONCEPTUAL FRAMEWORK



SMART NVR CONCEPTUAL FRAMERWORK



I. RATIONALE AND BRIEF BACKGROUND

1. Project Background and Content

The Quezon City Disaster Risk Reduction Management Office (QC DRRMO) is mandated to maintain a high-level of situational awareness and effective emergency response during occurrence of natural disaster such as earthquakes, typhoons, volcanic eruptions, severe-flooding, fires, and any other situations that requires their services.

To maintain a high standard of situational awareness and continuously improve public safety service and disaster response in the city, the QC DRRMO plans to enhance its surveillance system to monitor flood-prone and fire-prone areas in the city to further improve the security, disaster control and response of the local government.

Quezon City DRRMO would like to use the surveillance system and its associated technology to resolve some of its pain points such as:

- Provide greater area coverage of identified flood-prone and fire-prone areas in the city to further improve risk assessment, disaster prevention, control and response.
- Provide early warning system and audio announcement to select areas which are susceptible to floods during rainy seasons and/or typhoons.
- Improve the current surveillance system video retention and storage period from 30 days to 90 days.
- Deter public from committing crimes since most of CCTV cameras shall be placed in populated areas as it can also be used for public safety and security purposes.
- Provide a greater view of the neighborhood and city horizon.

II. PROJECT DESCRIPTION

The Surveillance and Storage enhancement project shall be for the use of Quezon City Disaster Risk Reduction and Management Office (QC DRRMO) to further improve the monitoring of flood-prone and fire-prone areas in Quezon City. It is also aimed to provide the residents of affected areas an early warning and an audio announcement during typhoons and other natural disasters.

Water-level monitoring cameras shall be used to provide real-time water-level measurements of major rivers and flood-prone areas in the city especially during typhoons and heavy rainfall. Additionally, water level sensors shall also be used in conjunction with the water-level monitoring camera as additional redundancy and for improved situational awareness through use of web visualization dashboard.

III. PROJECT SCOPE OF WORK

Where the work to be performed is described. The scope of work should contain any milestones, reports, deliverables, and end products that are expected to be provided by the performing party. The scope of work should also contain a timeline for all deliverables.

1. Design, Supply, Delivery and Installation, Programming and Calibration, Testing and Commissioning of:
 - a. Storage for Outdoor Surveillance System
 - b. Outdoor Surveillance System
 - i. Bullet Network Camera
 - ii. PTZ Network Camera
 - iii. Industrial PoE+ Switches
 - iv. Fiber Core Switch
 - v. Distribution Switch
 - vi. Outdoor Enclosures
 - c. Water-Level Monitoring and Early Warning System
 - i. IP Horn Speakers
 - ii. Water-Level Sensor
 - iii. Web Visualization Dashboard
 - iv. Industrial PoE+ Switches
 - v. Outdoor Enclosures
 - vi. HDG Steel Poles
 - d. Video Management System
 - i. Server
 - ii. Software
 - iii. Licenses
 - e. PC Workstation
 - i. PC Workstation
 - ii. PC Desktop Computer
 - iii. Laptop
 - iv. Custom Console Workstation
 - v. Low-Back Swivel Chair
 - f. Precision Air Conditioning Unit (PACU)
 - i. Indoor/Outdoor Unit

- ii. Leak Detection Sensor
- g. Fire Suppression
 - i. Fire Suppression Agent
 - ii. Welded Cylinder
 - iii. Smoke Detector
 - iv. Electromagnetic Actuator
 - v. Manual Actuator
 - vi. Discharge Nozzle
 - vii. Discharge Pressure Switch
 - viii. Warning Signs
 - ix. Fire Alarm and Horn Strobes
- 2. Training and Documentation
- 3. After Sales Support

IV. TECHNICAL REQUIREMENTS

1. GENERAL REQUIREMENTS

The project requires the following:

ITEM DESCRIPTION	QTY	UOM
Outdoor Surveillance System		
4MP Varifocal Bullet Network Camera with complete pole mounting accessories	680	sets
4MP 32x PTZ Network Camera with complete pole mounting accessories	170	sets
4MP 25x Network Speed Dome with complete pole mounting accessories	10	sets
L2 + Ring Managed Gigabit Ethernet Switch, DIN-rail mounting, with 48V 480W DIN-rail power supply	50	sets
L3 Industrial 16-port 10/100/1000T 802.3at PoE+, 4-port 1G/2.5G SFP + Managed Ethernet Switch, DIN-rail mounting, with 48V 480W DIN-rail power supply	40	sets
L3 Industrial 8-port 10/100/1000T 802.3at PoE+, 4-port 1G/2.5G SFP + Managed Ethernet Switch, DIN-rail mounting, with 48V 480W DIN-rail power supply	63	sets
Smart NVR 18x Bay (empty) chassis, 16 cores, 64GB RAM, 2x 240GB M.2 SSD, 4x 1GbE + 2x 10GbE ports, 5Y 5x9xNBD standard warranty with NRD, with 126 16TB HDD	1	set

L3 46-Port 100/1000BASE-X SFP + 2-Port Gigabit TP/SFP + 4-Port 10G SFP + Managed Switch	2	sets
Layer 2 + 24-port 10/100/1000T + 4-port 10G SFP + Stackable Managed Switch	2	units
1000BASE-SX/LX SFP Transceiver	443	pcs
2500BASE-X SFP Transceiver	80	pcs
Outdoor Enclosure: NEMA3R, pole-mounted outdoor type, 400mm x 400mm x 200mm (WxHxD), 1.5mm THK with DIN-rail inside mounting plate, powder-coated, with pole mounting accessories, circuit breaker, earth grounding, lightning, and surge protection	103	sets
Water-Level Monitoring and IP-Based Public Address System		
Ultrasonic Proximity Device; 20 meter depth sensing range	50	sets
Web Visualization Dashboard	1	set
IP Speaker - 120 dB Max SPL, supports frequency response of 300Hz – 12.5KHz, supports MP3, G.711a/u, G.722 audio protocol, IP67, 70° horizontal x 100° vertical coverage pattern with built-in 15W Class-D amplifier	40	sets
L3 Industrial 8-port 10/100/1000T 802.3at PoE+, 4-port 1G/2.5G SFP + Managed Ethernet Switch, DIN-rail mounting, with 48V 480W DIN-rail power supply	10	sets
1000BASE-SX/LX SFP Transceiver	20	pcs
Outdoor Enclosure: NEMA3R, pole-mounted outdoor type, 400mm x 400mm x 200mm (WxHxD), 1.5mm THK with DIN-rail inside mounting plate, powder-coated, with pole mounting accessories, circuit breaker, earth grounding, lightning, and surge protection	10	sets
5mtrs to 9mtrs Hot-dipped galvanized steel pole for CCTV, Ultrasonic Proximity Sensors and IP-Speakers with extension arms and concrete pedestal	10	sets
Video Management System		
Server - 4210R×1/16G DDR4×2/1TB 7.2K SATA×2(RAID_1)/SAS_H330/1GbE×4/Win Svr 2019 495W(1+1)/2U/24DIMM/3 years support	1	set
Video Management System Platform	1	no.
Can support up to 10,000 CCTV cameras thru license expansion Supported: 2 years free SUP, Main/Auxiliary Storage, Alarm Management, Google Map, Evidence Management, Running on Virtual Machine, 100 Users Logged In Simultaneously, Health Monitoring/History Maintenance Data, Client Operation (e.g. Visual Tracking, Custom Window Division), etc.		
IP Speaker Module	1	no.

PC Desktop Workstation and Console Table and Chairs		
<u>PC Workstation</u> Intel® Xeon™ W-1350/16GB MEM/512GB M.2 SSD/1TB/RTX T600 4GB/KB/Mouse/Win11Pro/500W or benchmark equivalent Windows 10 Professional 64-Bit with dual 27-inch FHD IPS LCD monitor	2	sets
<u>PC Desktop</u> AMD Ryzen™ 5 5600G/8GB MEM/256GB M.2 SSD/1TB/KB/Mouse/Win11Pro/500W or benchmark equivalent Windows 10 Professional 64-Bit with dual 27-inch FHD IPS LCD monitor	5	sets
<u>Laptop</u> 15.6" FHD IPS, 11th Gen Intel Core i5-1135G7 Processor 8GB + 512GB SSD with laptop bag or benchmark equivalent Windows 10 Professional 64-Bit	5	sets
Custom-built console workstation table for Command Center staff/operators	12	sets
Low-back swivel chair: Black, low-back, gas-lift mechanism, adjustable height, black mesh, with arm rest	12	sets
Command Center – Data Center		
3TR Precision Airconditioning Unit (PACU) – Free blow type for Data Center	1	set
FM200 / HFC-227ea Fire Suppression System for Data Center, approximately 10m ² - 12m ² coverage area	1	set
15kVA Rackmount UPS, 15mins runtime at 100% load	1	set

V. INSTALLATION

The winning bidder/supplier shall provide the necessary installation, setup, and configuration services of "ALL" deliverables, to include but not limited to hardware, software, network, electrical and other components. Electrical tapping point inside the command center shall be provided by the local government. Electrical power tapping point for the CCTV remote site, and all associated devices shall be provided by the QC LGU.

The winning bidder/supplier shall conduct all necessary technical site survey, studies, simulations, calculations, site preparation, coordination, and investigation prior to installation.

The QC DDRMO shall reuse the existing command center and data center located at Quezon City Hall Complex, Kalayaan Avenue, Diliman, Quezon City. The data center with an approximate area of 12 sqm. shall be equipped with a new 10kW Precision Airconditioning Unit (PACU) and a Fire Suppression System. Additionally, the SMART NVR shall be installed in the server rack along with the existing storage system. The new SMART NVR shall be configured as the primary server/storage for the surveillance system while the existing storage system shall be re-purposed by QC DRRMO.

The winning bidder/supplier shall provide all required interconnecting wires, cables, plugs, and connectors such as but not limited to single mode fiber optic cables, outdoor CAT6 cables, required electrical wires, RJ45s, dual LC connectors, sleeves, etc., to achieve a complete and functional system.

All network cameras (CCTV) shall connect to a DIN-rail type Industrial PoE+ Managed Ethernet Network switch via CAT6 cable. Industrial PoE+ Managed Ethernet Network switches shall connect to an aggregation switch through SFP connection using single mode fiber optic cable. The aggregation switch shall then connect to the underground fiber optic system backbone provided by the QC LGU. Aggregation switch location and fiber terminals shall be identified during implementation.

The surveillance system and IP-based public address system shall connect to the underground fiber optic cable system backbone provided by QC LGU.

The winning bidder/supplier shall install the surveillance and monitoring equipment in the specified areas identified by QC DRRMO. Existing utility poles, telco poles, light poles, can be used whenever possible.

Please refer to the table below for the coordinates.

Site No.	Location	Coordinates		PTZ	FIX
		Latitude	Longitude		
#1	Scout Tobias Corner Sct Rallos	14°38'5.74"N	121° 1'51.23"E	1	3
#2	Sct. Tobias Intersection(Jolilbee)	14°38'9.50"N	121° 1'51.86"E	1	3
#3	Panay Avenue corner Sct. Santiago	14°38'13.73"N	121° 1'42.18"E	1	3
#4	Mother Ignacia / Scout Madriñan	14°38'13.53"N	121° 1'49.00"E	1	3
#5	Scout Tobias corner Scout Madiñan	14°38'12.91"N	121° 1'49.76"E	1	3
#6	Talayan Village Calamba St. (Extension)	14°38'7.33"N	121° 0'49.94"E	1	3
#7	Talayan River	14°37'57.85"N	121° 0'53.88"E	1	3
#8	Capoas Street corner Todokan Street	14°38'40.56"N	121° 0'36.52"E		3
#9	Capoas Street corner Cadang Street	14°38'35.06"N	121° 0'36.93"E	1	3
#10	Capoas Street corner Ilihan Street	14°38'33.21"N	121° 0'38.10"E	1	3
#11	Capoas Street corner Bakil Street	14°38'32.33"N	121° 0'38.34"E	1	3
#12	Capoas Street corner Inaman Street	14°38'30.65"N	121° 0'38.53"E	1	3
#13	Malasimbo Street	14°38'33.03"N	121° 0'25.14"E	1	3
#14	Malasimbo corner Inaman Street	14°38'25.66"N	121° 0'27.63"E	1	3
#15	Malasimbo Street corner Amusan	14°38'27.29"N	121° 0'25.86"E	1	3
#16	Malasimbo Street corner Wayan Steet	14°38'24.28"N	121° 0'26.72"E	1	3
#17	A. Bonifacio Avenue Besides Ayala Mall	14°39'19.60"N	121° 0'2.12"E	1	3
#18	Tullahan River			1	2
#19	Lamesa Dam Spill Way Wireless Bridge	14°42'53.01"N	121° 4'22.73"E	3	2

#20	Mayon Street Welcome Rotonda	14°37'5.02"N	121° 0'5.96"E	1	3
#21	Mayon corner Dapitan	14°37'19.13"N	120°59'58.95"E	1	2
#22	Mayon corner N. Roxas	14°37'24.42"N	120°59'56.30"E	1	2
#23	Banawe corner Retiro	14°37'57.50"N	121°0'6.55"E	1	2
#24	Retiro corner Sto. Domingo	14°38'4.67"N	121°0'21.34"E	1	2
#25	Sto. Domingo corner Delmonte	14°38'20.21"N	121° 0'19.34"E	1	2
#26	West avenue towards Edsa	14°38'18.14"N	121°1'34.08"E	1	3
#27	15 th avenue corner Ermin Garcia	14°37'42.48"N	121°3'19.79"E	1	2
#28	Araneta Avenue corner Maria Clara	14°37'50.36"N	121° 0'40.31"E	1	2
#29	Blak na Bato	14°38'1.74"N	121° 0'14.70"E	1	2
#30	Bitoon Circle near Commonwealth Avenue	14°42'15.09"N	121° 4'59.73"E	1	3
#31	C-3 Sgt. Esqueria	14°38'18.30"N	121° 2'18.32"E	1	2
#32	Naga corner Dipolog Street	14°39'36.18"N	121° 2'46.98"E	1	2
#33	Naga corner Tagbilaran St.	14°39'34.78"N	121° 2'50.46"E	1	2
#34	Naga corner Cotabato Rd.	14°39'33.05"N	121° 2'54.75"E	1	2
#35	Narig St. Muñoz Market	14°39'23.45"N	121° 1'13.25"E	1	2
#36	Balintawak Old Samson Rd.	14°39'25.66"N	121° 0'3.70"E	1	2
#37	Tomas Morato corner Scout Lozano	14°37'46.89"N	121° 2'3.08"E	1	2
#38	Kaliraya Bridge	14°37'35.44"N	121° 1'10.83"E	1	2
#39	Kaliraya corner G. Araneta	14°37'27.64"N	121° 0'56.52"E	1	2
#40	Kaliraya corner ROTC Hunters	14°37'32.00"N	121° 1'4.07"E	1	2
#41	Araneta Victory Street	14°37'15.90"N	121° 0'54.04"E	1	2
#42	Bernardo FLOOD MARKERS	14°37'59.75"N	121° 0'51.93"E	1	1
#43	Devera Flood Markers	14°38'5.76"N	121° 0'55.91"E	1	3
#44	San Pedro Bautista	14°38'4.40"N	121° 0'52.12"E	1	2
#45	N.S Amoranto Flood Markers	14°38'7.85"N	121° 0'29.32"E	1	2
#46	NS Amoranto corner G. Araneta	14.6358852	121.0086329	1	1
#47	G.Araneta Floodmarkers	14°37'47.13"N	121° 0'44.01"E	1	1
#48	Maria Clara Street Flood Markers	14°37'48.76"N	121° 0'36.62"E	1	1
#49	Walling-Walling Flood Markers	14°37'46.76"N	121° 0'59.78"E	1	2
#50	Walling-Walling 2 Flood Markers	14°37'37.00"N	121° 1'8.57"E	1	2
#51	Gumamela1 Flood Markers	14°37'33.79"N	121° 1'15.63"E	1	1
#52	Gumamela 2	14°37'33.98"N	121° 1'22.73"E	1	1
#53	Gumamela 3	14°37'33.25"N	121° 1'13.14"E	1	2
#54	Old Samson Rd. Near Intersection	14.6566665	121.0046755	1	2
#55	Retiro corner Sto. Domingo	14°38'4.67"N	121° 0'21.34"E	1	2

#56	Sto. Domingo corner Del Monte	14°38'20.21"N	121° 0'19.34"E	1	2
#57	West avenue towards Edsa	14°38'18.14"N	121°1'34.08"E	1	2
#58	West avenue towards Quezon Avenue	14°38'44.95"N	121°1'40.01"E	1	2
#59	Edsa towards Quezon Avenue	14°39'18.19"N	121°1'47.98"E	1	3
#60	Old Samson Rd.	14°39'25.34"N	121° 0'7.64"E	1	3

#61	The Cloverleaf	14°39'18.46"N	121° 0'8.35"E	1	3
#62	Madelaide corner Caroline	14°39'13.96"N	121° 0'46.65"E	1	3
#63	Christine Street corner Josephine towards to medelaide	14°39'5.54"N	121° 0'42.55"E	1	2
#64	Geraldine corner Antoinette	14°38'58.61"N	121° 0'41.50"E	1	3
#65	Toctockan corner mabitian	14°38'41.94"N	121° 0'33.51"E	1	2
#66	Toctockan corner Kaingin road	14°38'43.07"N	121° 0'29.53"E	1	3
#67	Tinduan corner Bahawan	14°38'41.62"N	121° 0'29.96"E	1	2
#68	Bahawan corner posooy	14°38'39.97"N	121° 0'29.48"E	1	3
#69	Gasas Corner Corumi	14°38'35.69"N	121° 0'30.70"E	1	3
#70	Gasas Corner Mabitian	14°38'35.85"N	121° 0'32.31"E	1	3
#71	Mabitian corner Eskinita	14°38'32.89"N	121° 0'32.82"E	1	3
#72	Bakil Street corner Malac	14°38'31.53"N	121° 0'35.18"E	1	3
#73	Inaman Street corner Malac	14°38'29.46"N	121° 0'36.64"E	1	3
#74	Mabitian corner inaman	14°38'28.39"N	121° 0'35.60"E	1	2
#75	Lamilia corner mabitian	14°38'27.42"N	121° 0'36.76"E	1	3
#76	Corumi corner Wayan Street	14°38'24.84"N	121° 0'34.77"E	1	3
#77	Lagusan Street	14°38'41.94"N	121° 0'39.18"E	1	2
#78	Tabing Ilog Street	14°38'41.24"N	121° 0'39.76"E	1	2
#79	Githa Street	14°38'44.15"N	121° 0'39.09"E	1	3
#80	Siliangan Street	14°38'43.92"N	121° 0'39.97"E	1	2
#81	West Riverside	14°38'40.06"N	121° 0'40.97"E	1	2
#82	West Riverside corner Gen. Wood	14°38'42.39"N	121° 0'43.06"E	1	2
#83	West Riverside corner Marinduque Street	14°38'38.74"N	121° 0'40.82"E	1	2
#84	West Riverside	14°38'37.60"N	121° 0'40.41"E	1	2
#85	Gen. Wood corner Osmeña	14°38'33.94"N	121° 0'46.56"E	1	3
#86	Gen. Wood corner Manato	14°38'32.34"N	121° 0'47.14"E	1	3
#87	Ernesto Porto corner Marinduque Street	14°38'41.78"N	121° 0'48.54"E	1	3
#88	Ernesto porto corner apollo street	14°38'40.17"N	121° 0'49.00"E	1	2
#89	Ernesto porto corner Navarette Street	14°38'38.58"N	121° 0'49.36"E	1	3
#90	Ernesto porto corner San Pedro	14°38'37.00"N	121° 0'49.73"E	1	3
#91	Ernesto Porto corner Osmeña	14°38'35.34"N	121° 0'50.23"E	1	4
#92	Ernesto Porto corner Valencia	14°38'33.44"N	121° 0'50.71"E	1	4
#93	Florencia Heading to Gen. Wood	14°38'30.66"N	121° 0'48.03"E	1	2
#94	Valencia Intersection	14°38'30.53"N	121° 0'48.08"E	1	3
#95	Florencia Road	14°38'29.65"N	121° 0'45.93"E	1	2
#96	West Riverside	14°38'27.48"N	121° 0'45.28"E	1	2
#97	Osmeña corner Lincoln Street	14°38'37.27"N	121° 0'52.16"E	1	2

#98	Lincoln Street	14°38'39.42"N	121° 0'52.42"E	1	4
#99	Lincoln Streen corner San Jose	14°38'53.82"N	121° 0'49.35"E	1	2
#100	Atty Pat Senador Sr. Corner Ernesto Porto	14°38'45.01"N	121° 0'47.40"E	1	3
#101	San Jose corner Tolentino	14°38'54.89"N	121° 0'51.84"E	1	3
#102	Tolentino Street	14°38'43.34"N	121° 0'54.28"E	1	2
#103	E. Rodriguez Sr. Avenue	14°37'14.35"N	121° 1'14.27"E	1	3
#104	E. Rodriguez Sr. Avenue corner La florilla	14°37'13.36"N	121° 1'10.99"E	1	3
#105	Montgomery Rd	14°37'18.32"N	121° 1'12.89"E	1	3
#106	Madison Loop	14°37'21.48"N	121° 1'14.12"E	1	2
#107	Alexander Street	14°37'18.48"N	121° 1'14.84"E	1	2
#108	Fairhope Steet	14°37'21.79"N	121° 1'15.08"E	1	2
#109	Jasper Street	14°37'23.88"N	121° 1'12.43"E	1	2

#110	Clayton Street	14°37'25.12"N	121° 1'10.35"E	1	3
#111	Meridient Street	14°37'25.95"N	121° 1'8.68"E	1	3
#112	Bryan Street	14°37'22.07"N	121° 1'8.53"E	1	2
#113	Trinity Dr.	14°37'18.14"N	121° 1'20.28"E	1	2
#114	Sta. Cecilia corner La Trinidad	14°37'11.32"N	121° 1'19.25"E	1	2
#115	14th Street	14°37'9.42"N	121° 1'20.20"E	1	3
#116	13st Street	14°37'7.68"N	121° 1'23.32"E	1	2
#117	12th street	14°37'4.89"N	121° 1'25.00"E	1	2
#118	11th street corner 12 street	14°37'1.66"N	121° 1'25.19"E	1	3
#119	10th street	14°37'0.28"N	121° 1'30.11"E	1	2
#120	9th street	14°36'56.70"N	121° 1'28.25"E	1	2
#121	9th street corner 4th street	14°36'53.04"N	121° 1'26.12"E	1	4
#122	4th street heading to Twin Hills	14°36'54.84"N	121° 1'24.97"E	1	3
#123	4th street corner Lena Hill	14°36'52.12"N	121° 1'28.08"E	1	2
#124	Lena Hill corner bright hill	14°36'56.35"N	121° 1'34.62"E	1	2
#125	Magna Hill Street	14°36'53.81"N	121° 1'35.98"E	1	3
#126	Banker Hill Street	14°36'51.62"N	121° 1'37.40"E	1	3
#127	9th street corner Victora Avenue	14°37'0.17"N	121° 1'37.45"E	1	3
#128	4th street corner Victoria Avenue	14°36'48.05"N	121° 1'44.93"E	1	3
#129	5th Street	14°36'50.61"N	121° 1'45.50"E	1	4
#130	victoria avenue heading to 6th street	14°36'55.07"N	121° 1'46.55"E	1	3
#131	Victoria Avenue heading 8th street	14°36'57.68"N	121° 1'40.46"E	1	3
#132	NS Amoranto corner Cordillera	14°37'54.46"N	120°59'59.17" E	1	3
#133	Cordillera heading to sibuyan street	14°37'56.05"N	120°59'58.75" E	1	3

#134	NS Amoranto corner Sicaba Street	14°37'58.12"N	121° 0'0.35"E	1	3
#135	NS Amoranto corner Pao Street	14°37'58.15"N	121° 0'2.21"E	1	3
#136	NS amoranto corner Palanan Street	14°37'58.31"N	121° 0'4.01"E	1	3
#137	Palanan corner Malaya	14°38'1.02"N	121° 0'3.73"E	1	3
#138	NS Amoranto corner Ubay Street	14°37'59.03"N	121° 0'8.44"E	1	3
#139	Palali Street	14°38'0.41"N	121° 0'10.39"E	1	3
#140	Biak na bato corner Macopa	14°37'59.52"N	121° 0'15.81"E	1	3
#141	Biak na bato heading to Don manuel Agregado Street	14°37'57.30"N	121° 0'16.78"E	1	3
#142	Biak na bato corner samat street	14°37'54.91"N	121° 0'17.83"E	1	4
#143	Biak na bato corner Calamba Street	14°37'52.73"N	121° 0'19.09"E	1	3
#144	Biak na bato corner Atok Street	14°37'50.14"N	121° 0'20.33"E	1	3
#145	Biak na bato heading to simoun street	14°37'47.59"N	121° 0'21.59"E	1	3
#146	Biak na bato corner Tirad Pass	14°37'45.22"N	121° 0'22.79"E	1	3
#147	Sto Domingo corner Calamba Street	14°37'55.68"N	121° 0'26.29"E	1	4
#148	Sto Domingo corner Tiras Pass	14°37'48.41"N	121° 0'29.36"E	1	3
#149	Maria Clara Street heading to Don Ramon	14°37'51.63"N	121° 0'43.45"E	1	3
#150	Malambo corner Talayan Road	14°37'59.10"N	121° 0'46.62"E	1	4
#151	Simbal corner calmon street	14°37'59.92"N	121° 0'42.13"E	1	3
#152	Talayan corner Pasian	14°38'6.53"N	121° 0'43.04"E	1	3
#153	Talayaan road corner Sabrang Street	14°38'15.24"N	121° 0'38.27"E	1	3
#154	Talayan road heading to Caraballo Street	14°38'20.29"N	121° 0'40.64"E	1	3
#155	Del Monte Avenue	14°38'23.45"N	121° 0'43.30"E	1	3
#156	West Riverside corner Alhambra	14°38'20.65"N	121° 0'46.39"E	1	3
#157	San Pedro corner Santillan Street	14°38'18.72"N	121° 0'48.50"E	1	3
#158	San Vicente Street	14°38'16.22"N	121° 0'48.99"E	1	3
#159	San Vicente corner Santillan Street	14°38'18.00"N	121° 0'50.12"E	1	4
#160	Santillan corner Basinillo	14°38'17.18"N	121° 0'51.59"E	1	4
#161	Santillan corner F. Bautista St.	14°38'18.52"N	121° 0'52.25"E	1	4
#162	Tolentino corner Santillan	14°38'16.37"N	121° 0'53.36"E	1	4
#163	San Joaquin heading tolentino Street	14°38'14.83"N	121° 0'52.78"E	1	4
#164	Tolentino corner Flores De Mayo	14°38'13.44"N	121° 0'52.11"E	1	4

#165	Morato Avenue corner Flores De Mayo	14°38'12.26"N	121° 0'54.87"E	1	4
#166	Morato Avenue corner Umali	14°38'10.83"N	121° 0'54.17"E	1	4
#167	Subic Street	14°38'8.38"N	121° 0'51.51"E	1	4
#168	Tolentino heading San Pedro Bautista	14°38'7.72"N	121° 0'50.30"E	1	3
#169	Morato Avenue corner G. Felipe Sr.	14°38'18.13"N	121° 0'57.38"E	1	3
#170	San Francico corner Morato Avenue	14°38'19.52"N	121° 0'58.10"E		4
#171	Morato Avenue heading Roosevelt Avenue	14°38'21.73"N	121° 0'59.09"E		3
#172	Tolentino corner G. Felipe Sr,	14°38'19.25"N	121° 0'54.67"E		4
#173	San Francisco corner tolentino	14°38'20.65"N	121° 0'55.33"E		3
#174	Zamora Street	14°38'21.40"N	121° 0'57.66"E		3
#175	Cooper Sr. Street	14°38'19.91"N	121° 1'7.63"E		3
#176	G. Del Pilar	14°38'24.39"N	121° 1'9.87"E		3
#177	Ilaw heading to E. Riverside	14°38'23.40"N	121° 1'13.37"E		4
#178	Del monte Avenue	14°38'28.20"N	121° 1'18.89"E		3
#179	Aragon heading to Natividad Street	14°38'30.49"N	121° 1'19.16"E		3
#180	Aragon heading to Matias	14°38'32.49"N	121° 1'15.38"E		3
#181	Aragon corner Basa	14°38'33.85"N	121° 1'14.67"E		3
#182	Pitmini St. intersection corner Aragon and Gomez St.	14°38'36.09"N	121° 1'13.44"E		4
#183	Del Monte Avenue	14°38'25.98"N	121° 1'5.27"E		3
#184	Judge Juan Luna St. corner Ilaw	14°38'30.48"N	121° 1'6.99"E		3
#185	Judge Juan Luna Intersection	14°38'37.40"N	121° 1'9.30"E		4
#186	Baler Street	14°38'44.24"N	121° 1'8.27"E		3
#187	Mendoza street corner Zamora	14°38'32.79"N	121° 1'21.70"E		3
#188	Mendoza street corner Matias	14°38'34.19"N	121° 1'21.31"E		3
#189	Zamora Street corner Kundiman	14°38'34.25"N	121° 1'26.51"E		3
#190	Basa corner Guevarra	14°38'37.69"N	121° 1'28.46"E		3
#191	Gomez corner Guevarra	14°38'39.74"N	121° 1'28.22"E		3
#192	Anak bayan street	14°38'41.48"N	121° 1'27.58"E		3
#193	Zorra Street	14°38'43.66"N	121° 1'26.42"E		3
#194	Cabotage intersection heading to Ilagan St	14°38'47.76"N	121° 1'30.57"E		3
#195	Ilagan St. corner Caluag St.	14°38'49.86"N	121° 1'37.61"E		3
#196	Baler corner Rest Haven	14°38'51.21"N	121° 1'31.42"E		2
#197	W Maya Dr.	14°38'49.45"N	121° 1'44.02"E		3
#198	W maya Dr. corner San Pablo Road	14°38'48.47"N	121° 1'43.85"E		3
#199	San Pablo Road corner S Lawin	14°38'49.45"N	121° 1'47.83"E		3

#200	San Pablo Road corner Lipa road	14°38'50.58"N	121° 1'49.78"E		3
#201	East Lawin corner Basilan	14°38'54.46"N	121° 1'57.37"E		3
#202	East Lawin Intersection heading to E Maya Dr.	14°38'58.69"N	121° 1'59.09"E		3
#203	Epifanio de los Santos Avenue corner Jasm Dr.	14°38'51.95"N	121° 2'6.34"E		3
#204	Quezon Ave. Edsa	14°38'39.51"N	121° 2'15.00"E		4
#205	Edsa corner Panay Avenue	14°38'34.81"N	121° 2'16.95"E		3
#206	Edsa corner Centris	14°38'33.87"N	121° 2'19.50"E		3
#207	E Toon Loop A	14°38'25.97"N	121° 2'27.87"E		3
#208	Nia Road.	14°38'30.21"N	121° 2'31.56"E		3
#209	Bir Road	14°38'36.68"N	121° 2'35.64"E		3
#210	Kaliraya road corner Talayan	14°37'28.78"N	121° 0'45.25"E		3
#211	Kaliraya road corner Victory Avenue	14°37'24.27"N	121° 0'39.21"E		3
#212	Kaliraya road corner BMA Avenue	14°37'21.66"N	121° 0'36.64"E		3
#213	BMA Ave. corner Cardz	14°37'17.19"N	121° 0'40.98"E		3
#214	Cadiz corner Batulao	14°37'16.20"N	121° 0'37.85"E		3
#215	Victory Avenue corner Cabalata	14°37'21.16"N	121° 0'42.35"E		3
#216	Lumot corner Tuayan	14°37'25.55"N	121° 0'45.94"E		3
#217	Manungal corner Cabalata	14°37'22.97"N	121° 0'51.61"E		3

#218	G. Araneta Avenue	14°37'7.95"N	121° 0'54.09"E		3
#219	BMA Avenue corner Kabignayan	14°37'13.48"N	121° 0'43.77"E		3
#220	Victory Avenue	14°37'17.96"N	121° 0'45.35"E		4
#221	Victory Avenue corner Manungal	14°37'16.32"N	121° 0'50.72"E		3
#222	Manungal corner Kabignayan	14°37'14.25"N	121° 0'50.50"E		3
#223	Manungal corner Kitanlad	14°37'10.99"N	121° 0'50.19"E		3
#224	Kitanlad corner BMA avenue	14°37'10.45"N	121° 0'44.04"E		3
#225	E. Rodriguez Sr. Avenue corner BMA Avenue	14°37'7.22"N	121° 0'44.34"E		3
#226	Kabignayan intersection corner banawe	14°37'12.76"N	121° 0'35.04"E		4
#227	Banawe corner Kitanlad	14°37'9.70"N	121° 0'35.16"E		4
#228	E. Rodriguez Sr. Ave. corner Banawe	14°37'6.39"N	121° 0'35.72"E		3
#229	Cabalata Street	14°37'23.22"N	121° 0'48.64"E		3
#230	Kaliraya road corner Elga Avenue	14°37'27.92"N	121° 0'52.10"E		4
#231	Victory Avenue corner Agno Ext.	14°37'26.82"N	121° 0'37.27"E		3
#232	Quezon Avenue corner Victory Avenue	14°37'29.24"N	121° 0'34.56"E		3

#233	Aгно Ext corner Туayan	14°37'31.86"N	121° 0'42.50"E		3
#234	Mazaraġa Street	14°37'31.91"N	121° 0'47.92"E		3
#235	Mazaraġa corner Agno Ext	14°37'34.43"N	121° 0'45.47"E		3
#236	Agno Ext corner Elġa Avenue	14°37'36.83"N	121° 0'48.38"E		3
#237	Quezon Avenue intersection G. Araneta Avenue	14°37'42.17"N	121° 0'48.01"E		3
#238	Maharlika corner Masaya Street	14°39'0.58"N	121° 3'13.01"E		3
#239	Mayaman corner Mahinhin	14°38'54.48"N	121° 3'13.06"E		3
#240	Manigo corner Matiwasaŷ	14°38'58.55"N	121° 3'17.45"E		3
#241	Malusog corner Matiwasaŷ	14°38'56.09"N	121° 3'16.70"E		3
#242	Mahusaŷ corner Matiwasaŷ	14°38'52.97"N	121° 3'17.05"E		3
#243	Mayumi Street	14°38'51.41"N	121° 3'18.40"E		1
#244	1 Katipunan Ave, Brġy. San Bartolome	14°42'44.97"N	121° 1'15.22"E		1
					170
					680

VI. TECHNICAL SPECIFICATION

ITEM	TECHNICAL SPECIFICATION				
1.	Item Name	4MP Varifocal Bullet Network Camera			
	Description	4MP Varifocal Bullet Network Camera			
	Required Quantity	680 sets			
	Image Sensor	1/3" Progressive Scan CMOS			
	Max Resolution	2560 x1440			
	Shutter Time	1/3s to 1/100,000 s			
	Min. Illumination	Color: 0.005 Lux @ (F1.6, AGC ON), 0 Lux with light			
	Day and Night	IR Cut Filter			
	Angle Adjustment	Pan: 0° to 360°, tilt: 0° to 90°, rotate: 0° to 360°			
	Lens Type	Varifocal lens, motorized lens, 2.7 to 13.5 mm			
	Focal Length & FOV	2.7 to 13.5 mm, horizontal FOV 96.7° to 29.7°, vertical FOV 51.7° to 16.7°, diagonal FOV 114.3° to 34.0°			
	Lens Mount	Integrated			
	Iris Type	Fixed			
	Aperture	Max F1.6			
	Depth of Field	Wide: 1 m to ∞ Tele: 4.1 m to ∞			
	DORI	Wide: D: 64 m, O: 25.4 m, R: 12.8 m, I: 6.4 m Tele: D: 198 m, O: 78.6 m, R: 39.6 m, I: 19.8 m			
Illuminator		IR			

IR Range	Up to 60m
IR Wavelength	850nm
Main Stream	50 Hz: 20 fps (2560 × 1440), 25 fps (1920 × 1080, 1280 × 720) 60 Hz: 20 fps (2560 × 1440), 30 fps (1920 × 1080, 1280 × 720)
Sub Stream	50 Hz: 20 fps (2560 × 1440), 25 fps (1920 × 1080, 1280 × 720) 60 Hz: 20 fps (2560 × 1440), 30 fps (1920 × 1080, 1280 × 720)
Third Stream	50 Hz: 20 fps (2560 × 1440), 25 fps (1920 × 1080, 1280 × 720) 60 Hz: 20 fps (2560 × 1440), 30 fps (1920 × 1080, 1280 × 720)
Video Compression	Main stream: H.265+/H.265/H.264+/H.264, Sub-stream: H.265/H.264/MJPEG, Third stream: H.265/H.264
Video Bit Rate	32 Kbps to 8 Mbps
H.264 Type	Baseline Profile, Main Profile, High Profile
H.265 Type	Main Profile
Bit Rate Control	CBR, VBR
Region of Interest (ROI)	1 fixed region for main stream and sub-stream
Audio Type	Mono sound
Environment Filtering	Yes
Audio Sampling Rate	8 kHz/16kHz
Audio Compression	G.711/G.722.1/G.726/MP2L2/PCM/MP3/AAC-LC
Audio Bit Rate	64 Kbps (G.711ulaw/G.711alaw)/16 Kbps (G.722.1)/16 Kbps (G.726)/32 to 192 Kbps (MP2L2)/8 to 320 Kbps (MP3)/16 to 64 Kbps (AAC-LC)
Security	Password protection, complicated password, HTTPS encryption, 802.1X authentication (EAP-MD5), watermark, basic and digest authentication for HTTP/HTTPS, WSSE and digest authentication for Open Network Video Interface, RTP/RTSP over HTTPS, security audit log, TLS 1.2, TLS 1.3, host authentication (MAC address)
Simultaneous Live View	Up to 6 channels
API	Open Network Video Interface (Profile S, Profile T, Profile G), ISAPI, SDK
Protocols	TCP/IP, ICMP, DHCP, DNS, HTTP, RTP, RTSP, NTP, IGMP, IPv6, UDP, QoS, FTP, SMTP, HTTPS, DDNS, UPnP, 802.1X
User/Host	Up to 32 users 3 user levels: administrator, operator, and user
Wide Dynamic Range	120 dB
SNR	≥ 52 dB
Day/Night Switch	Day, Night, Auto, Schedule
Image Enhancement	BLC, HLC, 3D DNR
Image Settings	Rotate mode, saturation, brightness, contrast, sharpness, gain, white balance, adjustable by client software or web browser

	Privacy Mask	4 programmable polygon privacy masks
	Ethernet Interface	1 RJ45 10 M/100 M self-adaptive Ethernet port
	On-Board Storage	Built-in memory card slot, support microSD/microSDHC/microSDXC card, up to 256 GB
	Audio	1 input (line in), two-core terminal block, max. input amplitude: 3.3 Vpp, input impedance: 4.7 K Ω , interface type: non-equilibrium, 1 output (line out), two-core terminal block, max. output amplitude: 3.3 Vpp, output impedance: 100 Ω , interface type: non-equilibrium
	Alarm	1 input, 1 output (max. 12 VDC, 30 mA)
	Reset Key	Yes
	Basic Event	Motion detection (support alarm triggering by specified target types (human and vehicle)), video tampering alarm, exception
	Smart Event	Line crossing detection, intrusion detection
	Linkage	Upload to FTP/NAS/memory card, notify surveillance center, send email, trigger recording, trigger capture
	Power	12 VDC \pm 25%, 0.86 A, max. 12.9 W, \varnothing 5.5 mm coaxial power plug, reverse polarity protection, PoE: IEEE 802.3af, Class 3
	Material	Metal
	Operating Temperature	-30 $^{\circ}$ C to 60 $^{\circ}$ C (-22 $^{\circ}$ F to 140 $^{\circ}$ F), Humidity 95% or less (non-condensing)
	Compliance	CE-EMC, CE-RoHS
	Protection	IP67

ITEM	TECHNICAL SPECIFICATION	
2.	Item Name	4MP 15x PTZ Network Camera (PTZ Type 1)
	Description	4MP 15x PTZ Network Camera
	Required Quantity	170 sets
	Image Sensor	[Bullet channel]: 1/3" Progressive Scan CMOS; [PTZ channel]: 1/2.8" progressive scan CMOS
	Max Resolution	[Bullet channel] 2560 \times 1440, [PTZ channel] 2560 \times 1440
	Shutter Time	1/3s to 1/30,000 s
	Min. Illumination	[Bullet channel]: 0.0005 Lux @ (F1.0, AGC ON), 0 Lux with light; [PTZ channel]: Color: 0.005 Lux @ (F1.6, AGC ON), B/W: 0.001 Lux @ (F1.6, AGC ON), 0 Lux with IR
	Slow Shutter	Yes
	Focus	semi-auto, manual, auto
	Zoom	[PTZ channel] 15 \times optical, 16 \times digital

Day and Night Switch	ICR
White Balance	auto, ATW, sodium lamp, fluorescent lamp, indoor, outdoor, MWB, Locked WB
Focal Length	Bullet channel]: 2.8 mm; [PTZ channel]: 4.8 to 72 mm, 15 × optical
Zoom Speed	[PTZ channel]: approx. 2.3 s
FOV	[Bullet channel]: Horizontal field of view: 96.1°, Vertical field of view: 52.1°, Diagonal field of view: 113.3°; [PTZ channel]: Horizontal field of view: 55° to 4° (wide-tele), Vertical field of view: 33° to 2.2° (wide-tele), Diagonal field of view: 61.5° to 4.6° (wide-tele)
Aperture	[Bullet channel]: F1.0; [PTZ channel]: F1.6
Supplement Light Type	[PTZ channel]: IR; [Bullet channel]: White Light
Smart Supplement Light	Yes
Supplement Light Range	[PTZ channel]: up to 100 m; [Bullet channel]: up to 30 m
Movement Range (Pan)	360°
Movement Range (Tilt)	-15° to 90° (auto flip)
Pan Speed	pan speed: configurable from 0.1° to 80°/s; preset speed: 80°/s
Tilt Speed	tilt speed: configurable from 0.1° to 80°/s, preset speed 80°/s
Proportional Zoom	yes
Presets	300
Patrol Scan	8 patrols, up to 32 presets for each patrol
Pattern Scan	4 pattern scans
Power-off Memory	yes
Park Action	preset, pattern scan, patrol scan, auto scan, tilt scan, random scan, frame scan, panorama scan
3D Positioning	yes
PTZ Status Display	yes
Preset Freezing	yes
Scheduled Task	preset, pattern scan, patrol scan, auto scan, tilt scan, random scan, frame scan, panorama scan, dome reboot, dome adjust, aux output
Exception Detection	IP address conflict, HDD full, illegal login, HDD error, network disconnected, Abnormal Reboot
Region of Interest (ROI)	8 fixed regions for each stream
Stream Type	main stream, sub-stream, third stream
Main Stream	[Bullet channel]: 50 Hz: 25 fps (2560 × 1440, 1920 × 1080, 1280 × 960, 1280 × 720) 60 Hz: 30 fps (2560 × 1440, 1920 × 1080, 1280 × 960, 1280 × 720) [PTZ channel]: 50 Hz: 25 fps (2560 × 1440, 1920 × 1080, 1280 × 960, 1280 × 720) 60 Hz: 30 fps (2560 × 1440, 1920 × 1080, 1280 × 960, 1280 × 720)

Sub-Stream	[Bullet channel]: 50 Hz: 25 fps (704 × 576, 640 × 480, 352 × 288) 60 Hz: 30 fps (704 × 480, 640 × 480, 352 × 240) [PTZ channel]: 50 Hz: 25 fps (704 × 576, 640 × 480, 352 × 288) 60 Hz: 30 fps (704 × 480, 640 × 480, 352 × 240)		
	Third Stream	[Bullet channel]: 50 Hz: 25 fps (1920 × 1080, 1280 × 960, 1280 × 720, 704 × 576, 640 × 480, 352 × 288) 60 Hz: 30 fps (1920 × 1080, 1280 × 960, 1280 × 720, 704 × 480, 640 × 480, 352 × 240) [PTZ channel]: 50 Hz: 25 fps (1920 × 1080, 1280 × 960, 1280 × 720, 704 × 576, 640 × 480, 352 × 288) 60 Hz: 30 fps (1920 × 1080, 1280 × 960, 1280 × 720, 704 × 480, 640 × 480, 352 × 240)	
	Video Compression	H.265,H.264,MJPEG	
	Video Bit Rate	32 kbps to 16384 kbps	
	H.264 Type	baseline profile, main profile, high profile	
	H.265 Type	main profile	
	H.264+	yes	
	H.265+	yes	
	Audio Compression	G.711,G.722.1,G.726,MP2L2,PCM,AAC-LC	
	Audio Bit Rate	32 to 160 Kbps (MP2L2),16 to 64Kbps (AAC-LC)	
Audio Sampling Rate	Audio Sampling Rate	8 kHz,16 kHz,32 kHz,48 kHz	
	Environment Filtering	Noise	yes
	Smart Record	ANR, Dual-VCA	
	API	Open Network Video Interface (Profile S, Profile G, Profile T),ISAPI,SDK,ISUP	
	Network Storage	NAS (NFS, SMB/ CIFS), ANR,ANR	
	Protocols	IPv4/IPv6,HTTP,HTTPS,802.1x,Qos,FTP,SMTP,UPnP,SNMP,DNS,DDNS,NTP,RTSP,RTCP,RTPTCP/IP,UDP,IGMP,ICMP,DHCP,PPPoE,Bonjour,WebSocket,WebSockets	
	Simultaneous Live View	20	
	User/Host	32	
	Security Measures	Authenticated username and password, MAC address binding, HTTPS encryption,802.1X authenticated access, IP address filter	
	Image Settings	sharpness, saturation, brightness, contrast	
Wide Dynamic Range (WDR)	Wide Dynamic Range	120 dB	

SNR	≥ 52 dB
Defog	Digital defog
Image Stabilization	EIS
Image Enhancement	BLC,HLC,3D DNR
Regional Focus	Yes
Regional Exposure	Yes
Image Parameters Switch	Yes
Privacy Mask	[Bullet channel] 8 programmable polygon privacy masks, [PTZ channel] 24 programmable polygon privacy masks; mask color or mosaic configurable
Communication Interface	RJ45, self-adaptive 10M/100M Ethernet port
On-board Storage	Built-in memory card slot, support Micro SD/Micro SDHC/Micro SDXC, up to 256 GB
Alarm Input	1 alarm input
Alarm Output	1 alarm output
Audio Input	1 audio input, 2.0 to 2.4Vp-p, 1k Ohm±10%
Audio Output	1 audio output, line level, impedance: 600 Ω
Basic Event	[PTZ channel] motion detection, video tampering alarm, [PTZ channel & bullet channel] alarm input and output, exception
Smart Event	[PTZ channel & bullet channel] audio exception detection,[PTZ channel] line crossing detection, intrusion detection, region entrance detection, region exiting detection,[Bullet channel] line crossing detection, intrusion detection, region entrance detection, region exiting detection
Alarm Linkage	[Bullet channel] Upload to FTP/NAS/memory card, notify surveillance center, send email, trigger alarm output, and trigger recording [PTZ channel] Upload to FTP/NAS/memory card, notify surveillance center, send email, trigger alarm output, trigger recording, and PTZ actions (such as preset, patrol scan, pattern scan)
Face Capture	[Bullet channel] no, [PTZ channel] yes
General Function	mirror,watermark,IP address filter,password protection
Power	12 VDC, PoE +
Operating Conditions	-30°C to 65°C (-22°F to 149°F) ,humidity lower than 90%RH
Reset	Yes
Demist	Demist by heating the glass
Protection	IP66 Standard, 6000 V Lightning Protection, Surge Protection and Voltage Transient Protection

ITEM		TECHNICAL SPECIFICATION	
3.	Item Name	4MP Dual Sensor PTZ Network Camera (PTZ Type 2)	
	Description	4MP Dual Sensor PTZ Network Camera	
	Required Quantity	10 sets	
	Image Sensor	Two sensors, 1/1.8" Progressive Scan CMOS	
	Max Resolution	2560 × 1440	
	Shutter Speed	1/1 s to 1/30000 s	
	Min. Illumination	Color: 0.0004 Lux @ (F1.6, AGC ON), B/W: 0.0001 Lux @ (F1.6, AGC ON), 0 Lux with IR	
	Slow Shutter	Yes	
	Zoom	25 × optical, 16 × digital	
	Focus	Auto, semi-auto, manual	
	Focal Length	Focal Length	
	Zoom Speed	Approx. 6.2 s	
	FOV	Horizontal field of view: 59° to 3.05°, vertical field of view: 34.28° to 1.73°, diagonal field of view: 66.92° to 3.49°	
	Aperture	Max. F1.6	
	Supplement Light Range	IR distance: up to 200 m	
	Smart Supplement Light	Yes	
	Movement Range (Pan)	360°	
	Movement Range (Tilt)	-20° to 90°, auto flip	
	Pan Speed	Pan speed: configurable from 0.1° to 160°/s, preset speed: 240°/s	
	Tilt Speed	Tilt speed: configurable from 0.1° to 120°/s, preset speed 200°/s	
	Proportional Pan	Yes	
	Presets	300	
	Patrol Scan	8 patrols, up to 32 presets for each patrol	
	Pattern Scan	4 pattern scans, record time over 10 minutes for each scan	
	Power-off Memory	Yes	
	Park Action	Preset, pattern scan, patrol scan, auto scan, tilt scan, random scan, frame scan, panorama scan	
	3D Positioning	Yes	
	PTZ Status Display	Yes	
	Preset Freezing	Yes	

Scheduled Task	Preset, pattern scan, patrol scan, auto scan, tilt scan, random scan, frame scan, panorama scan, dome reboot, dome adjust, aux output
Main Stream	50 Hz: 25 fps (2560 × 1440, 1920 × 1080, 1280 × 960, 1280 × 720) 60 Hz: 30 fps (2560 × 1440, 1920 × 1080, 1280 × 960, 1280 × 720)
Sub-Stream	50 Hz: 25 fps (704 × 576, 640 × 480, 352 × 288) 60 Hz: 30 fps (704 × 480, 640 × 480, 352 × 240)
Third Stream	50 Hz: 25 fps (1920 × 1080, 1280 × 960, 1280 × 720, 704 × 576, 640 × 480, 352 × 288) 60 Hz: 30 fps (1920 × 1080, 1280 × 960, 1280 × 720, 704 × 480, 640 × 480, 352 × 240)
Video Compression	Main stream: H.265+/H.265/H.264+/H.264, Sub-stream: H.265/H.264/MJPEG, Thrid stream: H.265/H.264/MJPEG
Video Bit Rate	32 Kbps to 16 Mbps
H.264 Type	Baseline profile, Main profile, High profile
H.265 Type	Main profile
Scalable Video Coding (SVC)	H.264 and H.265 encoding
Region of Interest (ROI)	8 fixed regions for each stream
Audio Compression	G.711, G.722.1, G.726, MP2L2, PCM, AAC-LC
Audio Bit Rate	64 Kbps (G.711), 16 Kbps (G.722.1), 16 Kbps (G.726), 32 to 192 Kbps (MP2L2), 16 to 64Kbps (AAC-LC)
Network Storage	NAS (NFS, SMB/CIFS)
Protocols	IPv4/IPv6, HTTP, HTTPS, 802.1X, QoS, FTP, SMTP, UPnP, SNMP, DNS, DDNS, NTP, RTSP, RTCP, RTP, TCP/IP, UDP, IGMP, ICMP, DHCP, PPPoE, Bonjour
API	Open Network Video Interface (Profile S, Profile G, Profile T), ISAPI, SDK, ISUP
Simultaneous Live View	Up to 20 channels
User/Host	Up to 32 users. 3 user levels: administrator, operator, and user
Security	Password protection, complicated password, host authentication (MAC address), HTTPS encryption, 802.1X authentication (EAP-TLS, EAP-LEAP, EAP-MD5), IP address filter
Defog	Optical defog
Optical defog	auto
Image Enhancement	BLC, HLC, 3D DNR
BLC, HLC, 3D DNR	120 dB
Image Stabilization	EIS
Regional Exposure	Yes
Regional Focus	Yes
Image Settings	Saturation, brightness, contrast, sharpness, gain, and white balance

	adjustable by client software or web browser
Image Parameters Switch	Yes
Privacy Mask	24 programmable polygon privacy masks, mask color or mosaic configurable
SNR	≥ 52 dB
Ethernet Interface	Ethernet Interface
On-board Storage	Built-in memory card slot, support microSD/microSDHC/microSDXC card, up to 256 GB
Alarm	7 input(s), 2 output(s)
Audio	1 input (line in), max. input amplitude: 2-2.4 vpp, input impedance: 1 KΩ ± 10%, 1 output (line out), line level, output impedance: 600 Ω
RS-485	1 RS-485 (Half duplex, HIKVISION, Pelco-P, Pelco-D, self-adaptive)
Smart Event	audio exception detection
Basic Event	exception, alarm input and output
Alarm Linkage	Upload to FTP/NAS/memory card,notify surveillance center,send email,trigger alarm output,trigger recording,and PTZ actions (such as preset, patrol scan, pattern scan)
Gauge Reading	Built-in gauge reading algorithm to automatically get the readings of standard water level gauges
Detection Distance	≤80 m
Water Level Range	0 to 40 m
Minimum Scale	1 cm
Detection Accuracy	±2 cm
General Function	mirror, password protection
Power Interface	12 VDC, max. 42 W, including max. 12 W for IR, and 8 W for heater
Operating Condition	-40 °C to 70 °C (-40 °F to 158 °F), Humidity % or less (non-condensing)
Wiper	Yes
Protection	IP67 (IEC 60529-2013), TVS 6000 V lightning protection, surge protection and voltage transient protection

ITEM	TECHNICAL SPECIFICATION	
	Item Name	Network Switch (Type 1)
	Description	Industrial 6-Port 100/1000X SFP + 2 -Port 1G/2.5G SFP + 2-Port 10/100/1000T Managed Switch
4.	Required Quantity	50 sets
	Copper Ports	2 10/100/1000BASE-T Ethernet interfaces (Ports 1 to 2)
	SFP/mini-GBIC Slots	2 100/1000/2500BASE-X mini-GBIC SFP ports (Ports 3 to 4)

	6 100/1000BASE-X mini-GBIC SFP ports (Ports 5 to 10)
SDRAM	128Mbytes
Flash Memory	64Mbytes
Reset Button	< 5 sec: System reboot > 5 sec: Factory default
ESD Protection	6KV DC
EFT Protection	6KV DC
Enclosure	IP30 aluminum metal case
Installation	DIN rail kit and wall-mount
Power Requirement	DC 12 to 48V, AC 24V Power Adapter
Switch Architecture	Store-and-Forward
Switch Fabric	26Gbps/non-blocking
Throughput	19.34Mpps@ 64 bytes packet
Address Table	8K entries, automatic source address learning and aging
Shared Data Buffer	512 Kbytes
Flow Control	IEEE 802.3x pause frame for full duplex Back pressure for half duplex
Jumbo Frame	9K bytes
Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable Power saving mode control
Port Status	Display each port's speed duplex mode, link status, flow control status, auto negotiation status, trunk status
Port Mirroring	TX/RX/both 1 to 1 monitor
VLAN	802.1Q tag-based VLAN, up to 4K VLAN groups Q-in-Q tunneling Private VLAN Edge MAC-based VLAN Protocol-based VLAN Voice VLAN MVR (Multicast VLAN Registration) GVRP Up to 4K VLAN groups, out of 4094 VLAN IDs
Link Aggregation	IEEE 802.3ad LACP/static trunk
Spanning Tree Protocol	IEEE 802.1D Spanning Tree Protocol (STP) IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
IGMP Snooping	IGMP (v1/v2/v3) snooping

	IGMP querier mode support Up to 255 multicast groups
MLD Snooping	MLD (v1/v2) snooping MLD querier mode support Up to 255 multicast groups
Bandwidth Control	Per port bandwidth control Ingress: 500Kb~1000Mbps Egress: 500Kb~1000Mbps
Ring	Supports ERPS, and complies with ITU-T G.8032 Supports Major ring and sub-ring Recovery time < 10ms @ 3 units Recovery time < 50ms @ 16 units
Synchronization	IEEE 1588v2 PTP (Precision Time Protocol) - Peer-to-peer transparent clock - End-to-end transparent clock
QoS	Traffic classification based, strict priority and WRR 8-level priority for switching - Port number - 802.1p priority - 802.1Q VLAN tag
Access Control List	IPv4/IPv6 IP-based ACL/MAC-based ACL IPv4/IPv6 IP-based ACE/MAC-based ACE Up to 256 entries
Port Security	IEEE 802.1X – Port-based authentication Built-in RADIUS client to co-operate with RADIUS server RADIUS/TACACS+ user access authentication
MAC Security	IP-MAC port binding MAC filter Static MAC address
Enhanced Security	DHCP Snooping and DHCP Option82 STP BPDU guard, BPDU filtering and BPDU forwarding DoS attack prevention ARP inspection IP source guard
IP Interfaces	Max. 8 VLAN interfaces
Routing Table	Max. 32 routing entries
Routing Protocols	IPv4 software static routing IPv6 software static routing
Basic Management Interfaces	Telnet/Web browser/SNMP v1, v2c
Secure Management Interfaces	SSHv2, TLS v1.2, SNMP v3
System Management	Firmware upgrade by HTTP/FTP protocol through Ethernet network LLDP protocol SNTP PLANET Smart Discovery Utility

	PLANET NMS System/CloudViewer
Event Management	Modbus TCP for real-time monitoring in SCADA system
Operating Temperature	40 ~ 75 degrees C
Compliance	FCC, CE

ITEM	TECHNICAL SPECIFICATION	
	Item Name	Network Switch (Type 2)
5.	Description	L3 Industrial 16-Port 10/100/1000T 802.3at PoE + 4-Port 1G/2.5G SFP Managed Ethernet Switch
	Required Quantity	43 sets
	Copper Ports	16 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports
	SFP/mini-GBIC Slots	4 1000BASE-SX/LX/BX SFP interfaces (Port-17 to Port-20) Compatible with 100BASE-FX and 2500BASE-X SFP
	PoE Injector Port	16 ports with 802.3at/af PoE injector function with Port-1 to Port-16
	Console	1 x RJ45-to-RS232 serial port
	Reset Button	< 5 sec: System reboot > 5 sec: Factory default
	ESD Protection	6KV DC
	Enclosure	IP30 aluminum case
	Installation	DIN-rail kit and wall-mount kit
	Connector	Removable 6-pin terminal block for power input Pin 1/2 for Power 1, Pin 3/4 for fault alarm, Pin 5/6 for Power 2 Removable 6-pin terminal block for DI/DO interface Pin 1/2 for DI 1 & 2, Pin 3/4 for DO 1 & 2, Pin 5/6 for GND
	Alarm	One relay output for power failure. Alarm relay current carry ability: 1A @ 24V DC
	2 digital input (DI)	Level 0: -24V~2.1V (±0.1V) Level 1: 2.1V~24V (±0.1V) Input load to 24V DC, 10mA max.
	2 digital output (DO)	Open collector to 24V DC, 100mA max.
	Power Requirements	Dual 48~56V DC
	Switch Fabric	52Gbps/non-blocking
	Switch Architecture	Store-and-Forward
	Throughput (packet per second)	38.6Mpps@ 64 bytes packet
	Address Table	32K entries, automatic source address learning and aging
	Shared Data Buffer	32Mbits

Flow Control	IEEE 802.3x pause frame for full duplex Back pressure for half duplex
Jumbo Frame	10K bytes
PoE Standard	IEEE 802.3at Power over Ethernet Plus/PSE
PoE Power Supply Type	End-span
PoE Power Output	IEEE 802.3af Standard - Per port 48V~51V DC (depending on the power supply), max. 15.4 watts IEEE 802.3at Standard - Per port 51V~56V DC (depending on the power supply), max. 36 watts
Power Pin Assignment	1/2(+), 3/6(-)
PoE Power Budget	48V Power input - 240W maximum (depending on power input) 52~56V Power input - Single power input: 240W maximum (depending on power input) - Dual power input: 320W maximum (depending on power input) ※Dual power input must be the same as DC voltage, like dual 56V
Max. Number of Class 2 PDs	16
Max. Number of Class 3 PDs	16
Max. Number of Class 4 PDs	16
Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable Power saving mode control
Port Status	Display each port's speed duplex mode, link status, flow control status, auto negotiation status, trunk status
Port Mirroring	TX / RX / Both Many-to-1 monitor
VLAN	IEEE 802.1Q tag-based VLAN, up to 255 VLAN groups IEEE 802.1ad Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN Voice VLAN MVR (Multicast VLAN Registration) GVRP (GARP VLAN Registration Protocol) Up to 4K VLAN groups, out of 4094 VLAN IDs
Link Aggregation	IEEE 802.3ad LACP/static trunk Supports 10 trunk groups with 4 ports per trunk group
Spanning Tree Protocol	IEEE 802.1D Spanning Tree Protocol

	IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol
QoS	Traffic classification based, strict priority and WRR 8-level priority for switching - Port number - 802.1p priority - 802.1Q VLAN tag - DSCP/TOS field in IP packet
IGMP Snooping	IPv4 IGMP (v1/v2/v3) snooping, up to 255 multicast groups IPv4 IGMP querier mode support
MLD Snooping	IPv6 MLD (v1/v2) snooping, up to 255 multicast groups IPv6 MLD querier mode support
Access Control List	IP-based ACL/MAC-based ACL Up to 123 entries
Bandwidth Control	Per port bandwidth control Ingress: 500Kb~1000Mbps Egress: 500Kb~1000Mbps
IP Interfaces	Max: 128 VLAN interfaces
Routing Table	Max: 128 routing entries
Routing Protocols	IPv4 hardware static routing IPv6 hardware static routing IPv4 OSPFv2 dynamic routing
Basic Management Interfaces	Console; Telnet; Web browser; SNMP v1, v2c
Secure Management Interfaces	SSH, TLS, SSL, SNMP v3
Operating Temperature	-40 ~ 75 degrees C
Compliance	FCC, CE

ITEM	TECHNICAL SPECIFICATION	
	Item Name	Network Switch (Type 3)
6.	Description	L3 Industrial 8-Port 10/100/1000T 802.3bt PoE + 2-Port 1G/2.5G SFP Managed Ethernet Switch
	Required Quantity	87 sets
	Copper Ports	8 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports
	SFP/mini-GBIC Slots	2 1000BASE-SX/LX/BX SFP interfaces (Port-9 to Port-10) Compatible with 100BASE-FX and 2500BASE-X SFP
	PoE Injector Port	8 ports with 802.3bt PoE+ + injector function with Port-1 to Port-8
	Console	1 x RJ45-to-RS232 serial port (115200, 8, N, 1)
	Reset Button	< 5 sec: System reboot > 5 sec: Factory default

Enclosure	IP30 aluminum case
Installation	DIN-rail or wall mounting
Connector	Removable 6-pin terminal block for power input Pin 1/2 for Power 1, Pin 3/4 for fault alarm, Pin 5/6 for Power 2 Removable 6-pin terminal block for DI/DO interface Pin 1/2 for DI 1 & 2, Pin 3/4 for DO 1 & 2, Pin 5/6 for GND
Alarm	One relay output for power failure. Alarm relay current carry ability: 1A @ 24V DC
2 digital input (DI)	2 digital input: Level 0: -24~2.1V ($\pm 0.1V$) Level 1: 2.1~24V ($\pm 0.1V$) Input load to 24V DC, 10mA max.
2 digital output (DO)	2 digital output: Open collector to 24VDC, 100mA
Power Requirements	Dual DC 48~56V, 7.5A max.
ESD Protection	Air 8KV DC Contact 6KV DC
Surge Protection	4KV DC
Switch Fabric	26Gbps/non-blocking
Switch Architecture	Store-and-Forward
Throughput (packet per second)	19.35Mpps@ 64 bytes packet
Address Table	32K entries, automatic source address learning and aging
Shared Data Buffer	32Mbits
Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex
Jumbo Frame	10Kbytes
SDRAM	512Mbytes
Flash Memory	64Mbytes
PoE Standard	IEEE 802.3bt PoE++ Type-4 PSE Backward compatible with 802.3at PoE+ PSE
PoE Power Supply Type	<ul style="list-style-type: none"> ■ 802.3bt ■ UPOE/POH ■ End-span ■ Mid-span ■ Force
PoE Power Output	802.3bt PoE++ - Per port 52V~56V DC (depending on the power supply), max. 90 watts UPOE(PoH) - Per port 52V~56V DC (depending on the power supply), max. 95 watts IEEE 802.3at Standard - Per port 52V~56V DC (depending on the power supply), max. 36 watts Force

	- Per port 52V~56V DC (depending on the power supply), max. 60 watts
Power Pin Assignment	End-span: 1/2(-), 3/6(+) Mid-span: 4/5(+), 7/8(-) 802.3bt/UPoE: 1/2(-), 3/6(+),4/5(+), 7/8(-)
PoE Power Budget	360W maximum (depending on power input)
PoE Ability PD @ 12.5 watts	8 units
PoE Ability PD @ 25 watts	8 units
PoE Ability PD @ 51 watts	6 units
PoE Ability PD @ 71 watts	4 units
Active PoE device alive detects	Yes
PoE Power Recycle	Yes, daily or predeinded schedule
PoE Schedule	4 schedule profiles
PoE Extend Mode	Yes, max. 160 to 200 meters
PoE System Management	System PoE Admin control Total PoE power budget control Auto power input and PoE budget control PoE Legacy mode Over-temperature threshold alarm PoE usage threshold alarm
PoE Port Management	Port Enable/Disable/Schedule PoE mode control - 802.3bt - UPoE - 802.3at End-span - 802.3at Mid-span Force mode Port Priority
Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable Port link capability control
Port Status	Display each port's speed duplex mode, link status, flow control status, auto negotiation status, trunk status
Port Mirroring	TX/RX/both Many-to-1 monitor
VLAN	802.1Q tagged VLAN Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN

	<p>Voice VLAN</p> <p>MVR (Multicast VLAN Registration)</p> <p>GVRP</p> <p>Up to 256 VLAN groups, out of 4095 VLAN IDs</p>
Link Aggregation	<p>IEEE 802.3ad LACP/static trunk</p> <p>Supports 3 trunk groups with 4 ports per trunk group</p>
Spanning Tree Protocol	<p>IEEE 802.1D Spanning Tree Protocol</p> <p>IEEE 802.1w Rapid Spanning Tree Protocol</p> <p>IEEE 802.1s Multiple Spanning Tree Protocol</p>
QoS	<p>Traffic classification based, strict priority and WRR</p> <p>8-level priority for switching</p> <ul style="list-style-type: none"> - Port number - 802.1p priority - 802.1Q VLAN tag - DSCP/TOS field in IP packet
IGMP Snooping	<p>IPv4 IGMP (v1/v2/v3) snooping</p> <p>IPv4 IGMP querier mode support</p> <p>Supports 255 IGMP groups</p>
MLD Snooping	<p>IPv6 MLD (v1/v2) snooping,</p> <p>IPv6 MLD querier mode support</p> <p>Supports 255 MLD groups</p>
Access Control List	<p>IP-based ACL/MAC-based ACL</p> <p>ACL based on:</p> <ul style="list-style-type: none"> - MAC Address - IP Address - EtherType - Protocol Type - VLAN ID - DSCP - 802.1p Priority <p>Up to 256 entries</p>
Bandwidth Control	<p>Per port bandwidth control</p> <p>Ingress: 500Kb~1000Mbps</p> <p>Egress: 500Kb~1000Mbps</p>
Synchronization	<p>IEEE 1588v2 PTP(Precision Time Protocol)</p> <ul style="list-style-type: none"> - Peer-to-peer transparent clock - End-to-end transparent clock
IP Interfaces	<p>Max. 128 VLAN interfaces</p>
Routing Table	<p>Max. 128 routing entries</p>
Routing Protocols	<p>IPv4 hardware static routing</p> <p>IPv6 hardware static routing</p> <p>OSPFv2 dynamic routing</p>
Basic Management Interfaces	<p>Console; Telnet; Web browser; SNMP v1, v2c</p>
Secure Management Interfaces	<p>SSHv1/SSHv2, TLS, SSL, SNMP v3</p>

	Operating Temperature	-40 ~ 75 degrees C
	Compliance	FCC, CE

ITEM	TECHNICAL SPECIFICATION	
	Item Name	Network Switch (Type 4)
7.	Description	L3 46-Port 100/1000BASE-X SFP + 2-Port Gigabit TP/SFP + 4-Port 10G SFP + Managed Switch
	Required Quantity	2 sets
	100/1000X SFP/mini-GBIC Slots	48
	10/100/1000T Copper Ports	2
	10GBASE-LR/SR SFP + Slots	4, compatible with 1000BASE-SX/LX/BX SFP
	Console	1 x RJ45 serial port (115200 , 8, N, 1)
	Reset Button	< 5 sec: System reboot > = 10 sec: Factory default
	Smart FAN	2
	Power Requirements	AC: 100~240V, 50/60Hz DC: 36V~60V, 2A max. Redundant power designed
	ESD Protection	6KV DC
	SDRAM	512Mbytes
	Flash Memory	64Mbytes
	Switch Fabric	176Gbps/non-blocking
	Throughput	130Mpps@ 64Bytes packet
	Switch Architecture	Store-and-Forward
	Address Table	16K entries, automatic source address learning and aging
	Share Data Buffer	32Mbits
	Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex
	Jumbo Frame	10KB
	Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection
		Flow Control disable/enable
	Port Status	Display each port's speed duplex mode, link status, flow control status, auto negotiation status, trunk status

Port Mirroring	TX/RX/Both Many-to-1 monitor
VLAN	802.1Q tagged based VLAN, up to 255 VLAN groups Q-in-Q tunneling Private VLAN Edge (PVE) Port Isolation MAC-based VLAN IP Subnet-based VLAN Protocol-based VLAN VLAN Translation Voice VLAN MVR (Multicast VLAN Registration) GVRP Up to 255 VLAN groups, out of 4095 VLAN IDs
Link Aggregation	IEEE 802.3ad LACP/Static Trunk Supports 26 trunk groups with 16 ports per trunk
QoS	Traffic classification based, strict priority and WRR 8-level priority for switching - Port number - 802.1p priority - 802.1Q VLAN tag - DSCP/TOS field in IP packet
IGMP Snooping	IPv4 IGMP (v1/v2/v3) snooping IPv4 IGMP querier mode support Supports 255 IGMP groups
MLD Snooping	IPv6 MLD (v1/v2) snooping, IPv6 MLD querier mode support Supports 255 MLD groups
Access Control List	IP-based ACL/MAC-based ACL ACL based on: - MAC Address - IP Address - EtherType - Protocol Type - VLAN ID - DSCP - 802.1p Priority Up to 256 entries
Bandwidth Control	Per port bandwidth control Ingress: 10Kbps~13000Mbps Egress: 10Kbps~13000Mbps
IP Interfaces	Max. 128 VLAN interfaces
Routing Table	Max. 128 routing entries
Routing Protocols	IPv4 OSPFv2 dynamic routing IPv4 hardware static routing IPv6 hardware static routing

Basic Management Interfaces	Console; Telnet; Web browser; SNMP v1, v2c
Secure Management Interfaces	SSHv2, TLS v1.2, SNMP v3
Management Functions	Firmware upgrade by HTTP protocol through Ethernet network Remote syslog and local system log LLDP protocol UDLD NTP UPnP
Operating	Temperature: 0 ~ 50 degrees C Relative Humidity: 5 ~ 95% (non-condensing)
Compliance	FCC, CE

ITEM	TECHNICAL SPECIFICATION	
	Item Name	Network Switch (Type 5)
8.	Description	Layer 2 24-Port 10/100/1000T + 4-Port 10G SFP + Stackable Managed Switch
	Required Quantity	2 sets
	10/100/1000BASE-T RJ45 Ports	24
	10GBASE-X SFP + Slots	4 10GBASE-SR/LR SFP + interfaces Compatible with 1000BASE-SX/LX/BX SFP transceiver
	Console	1 x RJ45-to-RS232 serial port
	CPU	ARM A9 800MHz
	RAM	512Mbytes
	Flash Memory	64Mbytes
	Power Requirements - AC	AC 100~240V, 50/60Hz
	Switch Architecture	Store-and-forward
	Switch Fabric	128Gbps/ non-blocking
	Switch Throughput	95.23Mpps
	Address Table	16K MAC address table with auto learning function
	ARP Table	1024
	ACL Table	900
	Shared Data Buffer	1.5MB
	Jumbo Frame	9KB
	Flow Control	Back pressure for half duplex IEEE 802.3x pause frame for full duplex

		IP Interfaces	Max. 32 VLAN interfaces
		Routing Table	IPv4 256 entries IPv6 128 entries
		Routing Protocols	IPv4 hardware static routing IPv6 hardware static routing
		Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable Port loopback detect
		Port Status	Display each port's speed duplex mode, link status, flow control status and auto negotiation status
		Port Mirroring	TX/RX/Both Remote port mirror (RSPAN) Many-to-1 monitor
		VLAN	IEEE 802.1Q tagged based VLAN, up to 4K VLAN groups IEEE 802.1ad Q-in-Q VLAN stacking/tunneling IEEE 802.1v Protocol-based VLAN Port-based VLAN MAC-based VLAN IP Subnet-based VLAN Voice VLAN GVRP for VLAN management, up to 256 VLAN
		Spanning Tree Protocol	IEEE 802.1D Spanning Tree Protocol (STP) IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) BPDU Guard, BPDU filtering and BPDU transparent Root Guard STP-based loopback detection
		Multicast	IPv4 IGMP v1/v2/v3 snooping IPv4 Querier mode support IGMP Filtering and IGMP Throttling IGMP Proxy reporting IGMP mroute-forward mode Up to 255 multicast groups IPv6 MLD v1/v2 snooping Up to 255 multicast groups Multicast VLAN Register (MVR), supports 5 multicast VLANs
		Link Aggregation	IEEE 802.3ad Ling Aggregation Control Protocol (LACP) Static trunk link aggregation Supports 26 groups with 8 ports per trunk group Up to 80Gbps bandwidth (full duplex mode) Load Balance Algorithm: - Source IP/destination IP/Source + destination IP - Source MAC/destination MAC/Source + destination MAC
		Storm Control	Broadcast/Multicast/Unicast storm control Rate: 64Kbps--10,000Mbps

Bandwidth Control	Input/Output/Both Per port bandwidth control Gigabit port: 64Kbps-1,000Mbps 10Gigabit port: 64Kbps-10,000Mbps
QoS	8 priority queues on all switch ports Scheduling for priority queues - Weighted Round Robin (WRR) - Strict priority - Hybrid (DRR/WRR + strict) Traffic classification: - IEEE 802.1p CoS/DSCP/IP Precedence - VLAN ID - ACL - Policy-based ingress and egress QoS
Ring	ITU-T G.8032 ERPS v1 and v2
Access Control List	Supports Standard and Expanded ACL - IP-based ACL - MAC-based ACL - ARP ACL - Time-based ACL ACL based on: - MAC Address - IPv4/IPv6 IP Address - EtherType - Protocol-number/UDP - sport/dport - DSCP - 802.1p Priority Up to 900 entries
Security	Port security Supports static MAC + port binding Defend against DoS or TCP attacks DHCP Snooping, DHCP Option 82 IP source guard Dynamic ARP inspection Command line authority control based on user levels
AAA	RADIUS client TACACS+ client
Network Access Control	IEEE 802.1x port-based network access control MAC-based authentication Web authentication Local/RADIUS authentication
System Configuration	Console and Telnet Web browser SNMP v1, v2c
Secure Management Interfaces	IPv4/IPv6 SSHv2, SSLv3, SNMPv3 Maximum 8 sessions for SSH and telnet connection

System Management	IPv4 and IPv6 dual stack management SNMP MIB and TRAP SNMP RMON 1, 2, 3, 9 four groups Firmware upgrade by HTTP/TFTP/FTP protocol through Ethernet network Configuration upload/download through HTTP/TFTP/FTP protocol Supports dual images and multiple configuration files Supports IEEE 802.1ab LLDP protocol NTP/SNTP client RADIUS authentication for IPv4/IPv6 login user name and password Security IP safety net management function: avoid unlawful landing at nonrestrictive area
Event Management	Remote Syslog System log SMTP
IP Clustering	16 members
Hardware Stacking	6 members max. Last 2 10G SFP+ slots are functioned as Stacking Up and Down interfaces
Operating Temperature	Temperature: 0 ~ 50 degrees C Relative Humidity: 5 ~ 90% (non-condensing)
Compliance	FCC, CE

ITEM	TECHNICAL SPECIFICATION	
	Item Name	48V Power Supply
	Description	48V, 480W DC Single Output DIN Rail Power Supply
9.	Required Quantity	180 sets
	Input Voltage	100-240V AC, 50/60Hz, 4.8A
	Power Output	480 watts, 48V, 10A
	Temperature	Operating:-20~70 degrees C (**) Storage:-40~85 degrees C
	Humidity	Operating: 20 ~ 95% Storage: 10 ~ 95% (non-condensing)
	Installation	DIN rail TS-35/7.5 or 15
	Safety & Function	UI508, TUV EN60950-1 approved (meeting EN60204-1)

ITEM	TECHNICAL SPECIFICATION
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10.	Item Name	SFP Transceiver (Type 1)
	Description	1000BASE-SX/LX SFP Transceiver
	Required Quantity	540 pcs
	PHY Type	IEEE 802.3z 1000BASE-LX
	Fiber Type	Single-Mode
	Connector	Dual LC/UPC
	DDM	YES
	Wavelength	1310nm
	Maximum Distance	20km
	Operating Temperature	0~60 degrees C

ITEM	TECHNICAL SPECIFICATION	
11.	Item Name	SFP Transceiver (Type 2)
	Description	2500BASE-X SFP Transceiver
	Required Quantity	100 pcs
	PHY Type	2500BASE-X
	Fiber Type	Single-Mode
	Connector	Dual LC/UPC
	DDM	YES
	Wavelength	1310nm
	Maximum Distance	20km
	Operating Temperature	0~70 degrees C

ITEM	TECHNICAL SPECIFICATION	
12.	Item Name	Smart NVR Video Surveillance Appliance
	Description	Smart NVR 18x Bay (empty) chassis with 16 core processor, 64GB RAM, 2x240GB M.2 SSD, 4x 1GbE + 2x 10GbE ports, 5 year 5x9xNBD standard warranty with NRD, 126 16TB SATA HDD
	Required Quantity	1 set
The solution should be a Video Surveillance Smart NVR appliance that is a high-performance virtual computing and storage appliance for video surveillance, access control, video analytics and related applications.		

	The proposed Smart NVR appliances must be able to support up to 1,500 cameras.
	The proposed Smart NVR appliances must have 2.1 PB of capacity.
	The Smart NVR appliance must support any Video Management System (VMS) if there is a need to change the VMS.
	The Smart NVR software must have a dashboard that enables to monitor, report, and alert on system health, compute, storage, and application resource utilization, as well as performance to verify that the NVR is recording and storing video, reducing the risk of any video loss.
	The Smart NVR software must be able to assign priorities and thresholds to each application.
	The Smart NVR must have a built-in data center grade security that has a four (4) layer security shield to prevent any unauthorized or malicious access or corruption.
	The virtualization hypervisor must be capable of virtual machine configuration.
	The Smart NVR must be capable to concurrently host other security applications on the same server
	<ul style="list-style-type: none"> a. Access control, Visitor Management, VMS Management application, VMS Recording application, Physical Security Monitoring application, Building Control application. b. Host VMS from multiple vendors on the same server.
	The Smart NVR must be capable to provide alerts to predictively failed drives as well as actual failures.
	The Smart NVR must utilize SSDs for the operating system (OS) drives.
	The Smart NVR appliance must have dual or redundant hot-swappable power supplies and fans.
	The Smart NVR appliance must have hot swappable disk drives protected by RAID 6 that can sustain up to two (2) drive failures.
	The Smart NVR appliance hardware architecture must provide a modular design based on 19-inch rack mount 2U form-factor server and storage components.
	The Smart NVR vendor must have in-country certified local technical engineers as support.
	The Smart NVR vendor must have in-country hardware spares in the event of any faulty hardware component.

ITEM	TECHNICAL SPECIFICATION	
	Item Name	Outdoor Enclosure
	Description	NEMA3R Cabinet
13.	Required Quantity	132 sets
	Built-Type	Custom / Fabricated or Off-The-Shelf
	Dimension	H: 400mm x W: 400mm x D: 200mm
	Material	1.5mm THK, Sheet Metal
	Installation	Pole-mounted, outdoor type
	Finish	Powder-coated
	Accessories	With DIN-rail inside in mounting plate, circuit breakers, lightning and surge protection device

Installation	The Outdoor Enclosure should come equipped with necessary mounting supports, straps, and complete mounting accessories, and QC DRRMO Logo sticker
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ITEM	TECHNICAL SPECIFICATION	
14.	Item Name	Surveillance Camera and Water Monitoring Pole
	Description	5~7 meters Hot Dipped Galvanized Steel Pole (HDG Steel Pole)
	Required Quantity	132 sets
	Type	Hot Dipped Galvanized Steel
	Height	5 meters to 7 meters (as per site requirement)
	Steel Diameter	4-inch or bigger
	Material	4mm THK or thicker
	Concrete Foundation	Minimum, W:350mm x D: 350mm x H: 900mm

ITEM	TECHNICAL SPECIFICATION	
15.	Item Name	Water-Level Sensor
	Description	Ultrasonic Proximity Device, 20 meters
	Required Quantity	50 sets
	RF Frequency	868 MHz
	RF Antenna	Internal
	RF Modulation	LoRa
	RF Range	Up to 15K
	RF Power	+25dBm
	Input Voltage Rating	5.0V, 24VDC
	Operating Current	50mA
	Operating Voltage	3.3V – On-board electronics
	Power Source	5.0V DC input. USB adapter and internal battery
	Battery Type	LiFePo4
	Battery Capacity	1500mAh / configurable
	Sensor Range	Up to 20 meters
	Operating Temperature Range	-20° C to +60° C

	Operating Voltage	DC 24V
	Operating Current	20mA
	Analog Output	4-20mA
	Accuracy	± 1mm
	Protection Grade	IP65

ITEM	TECHNICAL SPECIFICATION	
	Item Name	Web Visualization Dashboard
16.	Description	Ultrasonic Proximity Device, 20 meters
	Required Quantity	1 set
	General Requirement	The Admin must be able use or display their own branding company logo
	Device Management	The platform must be able to manage and support multiple devices and can support the protocol requirement - LORAWAN, - WEBHOOK
	User Management	Must have the capability to add, delete, modify, manage and control user access and privileges
	Data Collection	Collect data automatically and remotely for the ff. devices. - proximity device (20 meters)
	Data Visualization	Must provide a friendly configuration interface and be able to support different types of widgets, graph representations, time series graphs, table formats, and map visualization. The system must be able to show the 1 data from different sensors and must visualize these data automatically.
	Dashboard Color Schemes	The user-admin portal must be able to choose different color preferences for a more user-friendly dashboards/visualization
	Color-coded panels	The system must be able to show color-coded panel depending on the set threshold/alerts Sample Colors: Green: OK Orange: Warning Red: Critical
		The system must be able to map all the ff. - proximity sensor map location
	Device Mapping	that are integrated to the platform by providing the specific location (lat/long) or indoor plane position and display them through the visual map panel.
		All sensors displayed on the visual map must correspond to the color-coded alerts;

		green: ok orange: warning red: critical
	Data Analytics	The system must be capable of providing analytics based on the collected data. Able to provide trending and historical data
	Alerts, Alarm and Notification Set-up	the system's alarm function must be configurable depending on the threshold or set parameters. System must notify the user administrator for offline devices, breached parameter thresholds,
		System must be able to provide notifications of the device's status The system must be able to automatically generate and download reports via a csv format.
	Reports	Minimum report filter features; - hourly, - daily, - monthly, - annually, - or at a certain time filter
	Notification Integration	the system must be provisioned to integrate with different notification channels - Email, - In-App
	API Integration and Configuration	Must be interoperable with existing systems via API
	Shareable Dashboard	the system must be able to share the similar dashboard/s through a private link. Username and Password should be provided by the administrator upon accessing the link.
	Shareable Admin Access	the system platform should be able to add email addresses and provide an administrator access to authorized user/s only
	System Panel Refresh	the system must have a filter that user-admin can select data refresh interval sample refresh interval: every 1 minute every 5 minutes every 10 minutes

ITEM	TECHNICAL SPECIFICATION	
17.	Item Name	IP-Based Public Address System
	Description	IP-Based Horn Loudspeaker
	Required Quantity	40 sets
	Network Interface	10/100Base-TX self-adaptive network, RJ45 interface
	Network Protocol	TCP, UDP, RTP, ARP, ICMP, DHCP, DNS, IGMP, HTTP

Audio Protocol	MP3, G.711a/u, G.722
Speaker Output	8 Vms
Max Sound Pressure Level	118 dB
Power Input	PoE (IEEE 802.3af), maximum 13W
Operating Temperature	-40° C to +60° C
Protection Level	IP66

ITEM	TECHNICAL SPECIFICATION	
	Item Name	Server
	Description	Video Management System Server
18.	Required Quantity	1 set
	Processor	1x Intel Xeon SP (4210*1)
	Memory	32G DDR4 DIMM
	Storage Controllers	Manufacturer's Standard
	Drive Bays	1TB 7200 rpm SATA x 2 (RAID 1)
	Power Supply	495W (1+1)
	Form Factor	2U
	Security	TPM 1.2/2.0 optional Cryptographically signed firmware System Lockdown Secure Erase Secure Boot
	I/O Ports	4x 1GE
	Operating System	Windows Server 2016

ITEM	TECHNICAL SPECIFICATION	
	Item Name	Video Management Software
	Description	Video Management Software
19.	Required Quantity	1 set
	System Management Service is the core service, providing authentication, permission granting, and management services. It authenticates the Control Client access, manages the users, roles, permissions and monitors devices, and provides the interface for third-party system integration. It includes the following service: a) 3rd Party Device Access Gateway	

	<ul style="list-style-type: none"> a. Communication between SYS and third-party device <ul style="list-style-type: none"> i. System Management Service <ol style="list-style-type: none"> 1. Provide the unified authentication service for connecting with the clients and servers 2. Provides the centralized management for the users, roles, permissions, devices, and services. 3. Provides the configuration interface for security and management module. b) Management Service <ol style="list-style-type: none"> a. The content server and signaling gateway b. Mainly responsible for storage of static pages and reverse proxy of device configuration c) Streaming Gateway <ol style="list-style-type: none"> a. A component of SYS which forwards and distributes the video and audio data b. Shall support up to 200 video channels @ 2 Mbps input and 200 video channels @ 2 Mbps output. It is used for concurrent live view or playback. c. Shall not be added to the web client as Streaming Server
	Keyboard Proxy Service
	<ul style="list-style-type: none"> a) Used with network keyboard to access the Keyboard Proxy Service b) Network keyboard can be used for the live view operations on the smart wall
	Smart Wall Management Service
	<ul style="list-style-type: none"> a) Manage smart wall for displaying decoded video on smart wall b) Responds to Control Client's request and sends real-time messages to Control Client
	Shall have a built-in password protection not dependent on server
	The System shall have User Authentication
	Secure Activation
	<ul style="list-style-type: none"> a) A system algorithm shall check the user defined password for strength, based on the manufacturer's criteria. b) System shall determine and display password security level as "weak", "medium", or "strong". c) Password shall contain a minimum of two kinds of characters (lowercase letters, uppercase letters, numbers and special characters). d) Only ASCII characters shall be allowed. e) Password length shall be eight characters minimum.
	Create up to 3,000 areas with 5 levels, and up to 100,000 areas for Remote Site Management
Add up to 256 resources (including cameras, doors, elevators, alarm inputs, alarm outputs, UVSS, radars, digital signage terminals, speaker units, and third-party integrated resources) respectively to one area per SYS	
Add resources to other area, and display resources in sub-areas	
Synchronize resource names from devices and apply resource names to devices	
Shall have the ability to configure related map settings for current site:	
VIII.Shall upload picture or import existing map of other area to link related map to the area b.	

ITEM	TECHNICAL SPECIFICATION	
	Item Name	PC Workstation
	Description	Intel® Xeon™ W-1350/16GB MEM/512GB M.2 SSD/1TB/RTX T600
20.	Required Quantity	4GB/KB/Mouse/Win11 Pro/500W or benchmark equivalent
	Processor	2 sets
<p>Intel Xeon W-1350 6C/12T (3.30GHz) or benchmark equivalent</p>		

ITEM	TECHNICAL SPECIFICATION	
	Item Name	PC Workstation
	Description	Intel® Xeon™ W-1350/16GB MEM/512GB M.2 SSD/1TB/RTX T600
20.	Required Quantity	4GB/KB/Mouse/Win11 Pro/500W or benchmark equivalent
	Processor	2 sets
<p>Intel Xeon W-1350 6C/12T (3.30GHz) or benchmark equivalent</p>		

	Cache Memory	12MB	
	Memory	1x 16GB DDR4-3200 ECC UDIMM	
	Network Controller	1Gb/s (10/100/1000) BASE-T LAN port	
	Storage Controller	Onboard Software RAID 0,1,5,10	
	Storage	1x M.2 512GB PCIe NVMe SSD, 1x 3.5" 1TB SATA 7.2K HDD	
	Graphics	NVIDIA RTX T600 GDDRVI 4GB or benchmark equivalent	
	Storage Bays	2x 3.5" drive bays	
	Power Supply	500W power supply	
	Form Factor	Micro ATX Tower	
	I/O Port	Front	1x USB3.2 Gen1 port (Type C), 2x USB 3.2 Gen1 ports, 2x USB 2.0 ports, front audio jacks in/out
		Rear	1x Display Port 1.4, 1x HDMI Port, 2x USB 3.2 Gen2 ports(Type-A), 4x USB 3.2 Gen1 ports, 1x Gigabit LAN port (RJ-45), 3x Audio jacks (In/Out/Mic)
	Operating System	Windows 11 Professional 64-Bit	
	Display	2x 27-inch FHD IPS LCD Monitor	
	Accessories	USB Keyboard, USB Mouse, 600VA UPS	
	Supported OS	Microsoft Windows 10 64-bit / 11 64-bit, Red Hat Enterprise Linux 8.4 Ubuntu Linux 20.04	

ITEM	TECHNICAL SPECIFICATION		
	Item Name	PC Desktop	
21.	Description	AMD Ryzen™ 5 5600G/8GB MEM/256GB M.2 SSD/1TB/KB/Mouse/Win11Pro/500W or benchmark equivalent	
	Required Quantity	5 sets	
	Processor	AMD Ryzen 5 5400G 6C/12T (3.9GHz) or benchmark equivalent	
	Cache Memory	16MB	
	Memory	1x 8GB DDR4-3200 Non-ECC RDIMM	
	Network Controller	1Gb/s (10/100/1000) BASE-T LAN port	
	Storage	1x M.2 256GB PCIe NVMe SSD, 1x 3.5" 1TB SATA 7.2K HDD	
	Power Supply	500W power supply	
	Form Factor	Micro ATX Tower	
	I/O Port	Front	2x USB 3.2 Gen1 Ports, 2x USB 2.0 ports, 2x Audio Jacks (In/Out)
		Rear	1x RJ45 Ethernet LAN ports, 1x Display Port, 1x HDMI Port, 4x USB 3.1Gen2 port, 2x USB 2.0 ports, 3x Audio

	Jacks +, 1x PS2 PORT
Operating System	Windows 11 Professional 64-Bit
Display	2x 27-inch FHD IPS LCD Monitor
Accessories	USB Keyboard, USB Mouse, 600VA UPS
Supported OS	Microsoft Windows 10 64-bit / 11 64-bit Red Hat Enterprise Linux 8 Ubuntu Linux 20.04

ITEM	TECHNICAL SPECIFICATION	
	Item Name	Laptop
22.	Description	15.6" Intel Core i5 11 th Gen/8GB/512GB SSD/1TB/MX330 2GB/KB/Mouse/Win11Home S or benchmark equivalent
	Required Quantity	5 sets
	Processor	Intel Core i5-1135G7 Processor, Base Frequency2.40GHz, 8MB Cache, 4Cores, 8Tthreads, Turbo Frequency4.20GHz, 11th Generation or benchmark equivalent
	Memory	8GB (1x8GB) of DDR4 system memory, upgradable to 32 GB using two sodimm modules
	Storage	512GB PCIe NVMe SSD
	Graphics	NVIDIA® GeForce® MX330 with 2GB of dedicated GDDR5 VRAM
	Display	15.6" display with IPS (In-Plane Switching) technology, Full HD 1920 x1080, LED-backlit TFT LCD, 16:9 aspect ratio, 45% NTSC color gamut Wide viewing angle up to 170 degrees, Ultra-slim design, Mercury free, environment friendly
	Networking	Gigabit Ethernet 10/100/1000, Wake-on-LAN ready
	Wireless	<ul style="list-style-type: none"> • Intel® Wireless Wi-Fi 6 AX201 • 802.11a/b/g/n/acR2+ax wireless LAN • Dual Band (2.4GHz and 5GHz) • 2x2 MU-MIMO technology • Supports Bluetooth® 5.2 and later • Wi-Fi CNVi Interface
	Audio	Two built-in stereo speakers, Two built-in microphones
	Card Reader	SD Card Reader
	Camera	<ul style="list-style-type: none"> • 1280 x 720 resolution • 720p HD audio/video recording • Super high dynamic range imaging (SHDR) • Camera shutter cover
	I/O Port	<ul style="list-style-type: none"> • 1x USB 3.2 Gen 2 (up to 10 Gbps) • 1x USB 3.2 Gen 1 featuring power off USB charging • 2x USB 3.2 Gen 1

	<ul style="list-style-type: none"> • 1x VGA port • 1x RJ45 port • 1x DC-in jack for AC adapter • 1x 3.5mm headphone jack • 1x HDMI 2.0 port with HDCP support • 1x Kensington lock slot
Weight	Not more than 2kg
Battery	48Wh 3-cell Li-ion battery (1year warranty) Up to 12hours

ITEM	TECHNICAL SPECIFICATION	
	Item Name	Command Center Console Table
	Description	Custom-built console workstation table
23.	Required Quantity	12 sets
	<p>The console workstation shall be custom-made to suit the operational requirement of the end-user</p> <p>The console workstation shall have a standard desk height of 29 to 30 inches (74 to 76 centimeters)</p> <p>The console workstation shall have a minimum width of 48 inches up to 70 inches</p> <p>The console workstation shall have a minimum depth of 30 inches up to 35 inches</p> <p>The console workstation shall have cable organizers, and built-in power distribution units</p> <p>The console workstation shall be sturdy and constructed using a combination of hardwood and steel with standard command center console workstation finish as approved by the client.</p> <p>The console workstation shall have a compartment or cabinet under the desk for the CPU and peripherals with sliding or removal panel</p> <p>The console workstation shall come with black low-back mesh swivel chair with arm rest, gas-lift mechanism, adjustable height, and ergonomic.</p>	

ITEM	TECHNICAL SPECIFICATION	
	Item Name	Precision Air Conditioning Unit (PACU)
	Description	3TR PACU – Freeblow Type
24.	Required Quantity	1 set
	<p>The refrigeration system shall be split, with the compressor located in a remote or close-coupled condensing unit. The evaporator section shall be specifically designed for floor or wall-mounted installation and serviceable from the front of the system. Condensing units shall be designed for outdoor or indoor mounting, below the raised floor, above-dropped-ceiling, or in room installation</p> <p>Must be at least 10kw nominal capacity in One (1) compressor with One (1) outdoor unit.</p> <p>Voltage rating 208-230 volts 1ph 60 Hz</p> <p>Must have Scroll compressor Technology</p>	

	The control system shall prevent compressor short-cycling by a 3-minute timer from compressor stop to the next start
	The control system shall be microprocessor-based, factory-wired into the system and tested prior to shipment. The wall-mounted control enclosure shall include a 2-line by 16-character LCD providing continuous display of operating status and alarm condition. An 8-key membrane keypad for setpoint/ program control, fan speed selection and unit On/Off shall be located below the display. The control display shall be field-wired to the control board using 4-conductor field-supplied thermostat wire
	Sensitive temperature and humidity control
	It should be AHRI certified
	The cabinet and chassis shall be constructed of heavy gauge, painted furniture steel. The cabinet shall be de-signed for easy installation and service access from the front only
	Must be coupled refrigerant R407c and TXV
	Supply, delivery Installation of mechanical and electrical component for both indoor and outdoor unit in order to make the PACU operational
	Supply, Deliver and Installation of required electrical panel, breakers, lugs, wires, and roughing-in materials for electrical power supply for the indoor and outdoor unit location to be connected/terminated from nearest power source or electrical distribution panel
	Supply, Deliver, and installation of metal framing/support, pedestal for the indoor and outdoor units
	Termination, Testing and commissioning. Restoration of all affected areas.
	Bidder must ensure that all the works that will be done relating to the project will not interrupt operation on the data center and must strictly maintain the facilities desired room temperature

ITEM	TECHNICAL SPECIFICATION	
	Item Name	Fire Suppression System
25.	Description	FM200 / HFC227EA Fire Suppression System/ SG FIRE SYSTEM
	Required Quantity	1 set
	The fire suppression system shall cover an area of approximately 10-12 sq.m	
	The fire suppression system shall use HFC-227ea agent	
	The fire suppression system shall use discharge pressure switch	
	The fire suppression system shall use 6-inch fire alarm bell and horn strobes	
	The fire suppression system shall include exit warning sign and entrance warning signs	
	The fire suppression system shall use photoelectric smoke detectors	
	The fire suppression system shall use electromagnetic actuator	
	The fire suppression system shall have a disable switch	
	The fire suppression system shall have a manual release station	

ITEM		TECHNICAL SPECIFICATION	
26.	Item Name	Uninterruptible Power Supply (UPS)	
	Description	15kVA Rackmount UPS	
	Required Quantity	1 set	
	Power Rating	5 kVA / 5 kW	
	Input Voltage Range	100~280 Vac (Single phase, 2-wire + G) 100~175 Vac with linear de-rating 50~100%	
	Input Frequency	40~70 Hz	
	Input Power Factor	>0.99 (full load)	
	Input THD	<3%	
	Input Terminal	1	
	Output Power Factor	Unity	
	Output Voltage	200/208/220/230/240 Vac (Single phase)	
	Output Frequency	50/60 Hz ±0.05 Hz	
	Output Voltage Harmonic Distortion	≤ 2% (linear load)	
	Overload Capability	≤ 105%: continuous 106~125%, 5 minutes 126 ~ 150%, 1 minute > 150%: 500 ms	
	Receptacle	C13 x 6, C19 x 2, Terminal x 1, Load bank: C19 x 1	
	Efficiency AC-AC	Up to 95.5%	
	Efficiency ECO Mode	Up to 99%	
	Charge Current	1 A (default)	
	Audible Noise	48 dB	
	Display	Graphical and multi-lingual LCD	

ITEM		TECHNICAL SPECIFICATION	
27.	Item Name	PTZ Keyboard Controller	
	Description	PTZ Keyboard Controller	
	Required Quantity	5 sets	
	Description	PTZ Keyboard Controller	
	Network Interface	1; 10 M/100 Mbps self-adaptive Ethernet interface	
		Serial Interface	
		1x RS-232, 1x RS-422, 1x RS-485	

	Joystick	4-axis
	LCD Screen	128 x 64 pixel screen, minimum
	USB Interface	1x USB 2.0
	Account Management	1x Admin, 15x Operators

VII. PROJECT STANDARDS & GENERAL REQUIREMENTS

The following are the minimum qualifications and requirements for the Contractor:

- Bidder must provide manufacturer certificate for surveillance equipment, Flood monitoring devices and SMART NVR as an authorized Partner.
- Bidder must have a minimum of Ten (10)-year experience in supplying, commissioning, and servicing systems related to the project.
- Bidder must have completed at least one (1) significant city surveillance project similar in nature supplying, installing, commissioning, and servicing of systems related to the project in the last 3 years.
- Must have the capacity to support replacement of parts and provide reliable service during the warranty period.
- Bidder must have at least one (1) Project Manager with a Minimum of Three (3) years of project Management, Coordination, and Implementation.
- Bidder must provide functional designs of the systems to be provided.
- Bidder must indicate the model numbers, specifications, and source of origin of all products to be bid.
- Bidder must submit a service level certificate indicating the coverage of the warranty of the products and the nature of services.
- The winning bidder/supplier must have at least two (2) local qualified and trained technical personnel in the Philippines supported by a Certification from the OEM of SMART NVR and Surveillance Products.

VIII. TRAINING

Once the system is installed and fully operational, the winning bidder/supplier shall conduct the following trainings.

MODULE	TARGET PARTICIPANTS
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1. SMART NVR Basic Operations Training	10 QC DRRMO Personnel – 1 day [8 hours]
2. Video Management System Training	10 QC DRRMO Personnel – 1 day [8 hours]
3. Operations and Maintenance Training	10 QC DRRMO Personnel – 1 day [8 hours]

IX. WARRANTIES/GUARANTEES

- 1. Three (3) Years System Warranty; Manufacturer's Standard Warranty, starts upon completion.
- 2. Ten (10) Years Certification of parts availability from the Manufacturer.
- 3. Phone call Technical Support – within 1-2 hours from receipt of notice
- 4. Onsite Technical Support – within 4-8 hours from receipt of notice

X. PROJECT DURATION

Project duration is Two Hundred Forty (240) calendar days upon issuance of Notice To Proceed (NTP).

XI. BILL OF QUANTITIES

A. OUTDOOR SURVEILLANCE SYSTEM						
ITEM	PARTICULAR	DESCRIPTION	QTY	UOM	UNIT PRICE	TOTAL PRICE
OUTDOOR NETWORK CAMERA						
A1.1	4MP Varifocal Bullet Network Camera	4MP Varifocal Bullet Network Camera <ul style="list-style-type: none">> High quality imaging with 4 MP resolution> Efficient H.265+ compression technology to save bandwidth and storage> Clear imaging against strongbacklight due to WDR technology> 3D DNR technology delivers clean and sharp images> Easy installation with Power over Ethernet (PoE) technology> Water and dust resistant (IP67)	680	set	P 16,630.77	P 11,308,923.60
A1.2	4MP 15x PTZ Network Camera	4MP 15x PTZ Network Camera <ul style="list-style-type: none">> Captures a large area and great details at the same time> High quality imaging with 4 MP resolution> Excellent low-light performance with powered-by-DarkFighter technology and ColorVu technology> Secures an expansive area with 15x optical zoom and 16x digital zoom> Supports WDR, HLC, BLC, 3D DNR, defog, regional exposure, regional focus> Expansive night view with up to 100 m IR distance & 30 m white light> Supports 12V DC & PoE+> Focuses on human and vehicle targets classification based on deep learning	170	no.	P 54,230.77	P 9,219,230.90
A1.3	Wallmounted bracket for PTZ	Wallmount bracket for PTZ <ul style="list-style-type: none">> Wallmount Bracket> Aluminum Alloy	170	no.	P 2,378.20	P 404,294.00
A1.4	Dual Sensor PTZ Camera	Dual Sensor PTZ Camera <ul style="list-style-type: none">> Dual sensor 1/1.8" progressive scan CMOS> Built-in gauge reading algorithm to automatically get the readings of standard water level gauges> Detects water level range from 0 to 40 m, within 80 m distance, with minimum scale of 1 cm and detection accuracy of ±2 cm> High quality imaging with max. resolution of 2560 × 1440 @30 fps> 25 × optical zoom and 16 × digital zoom> Excellent low-light performance with dual-sensor structure> Min. Illumination: Color: 0.0004 Lux @ (F1.6, AGC ON), 8/W; 0.0001 Lux @ (F1.6, AGC ON), 0 Lux with IR> Water and dust resistant (IP67) and vandal resistant (IK10) excluding glass window	10	no.	P 271,153.85	P 2,711,538.50
A1.5	Wallmount bracket	Wallmount bracket <ul style="list-style-type: none">Wall Mount for Speed DomeAluminum alloyPlatinum Gray	10	no.	P 3,181.54	P 31,815.40
A1.6	Vertical Pole mount bracket	Vertical Pole Mount for PTZ <ul style="list-style-type: none">> Vertical Pole Mount Bracket> Aluminum Alloy & Steel	10	no.	P 4,175.77	P 41,757.70
A1.7	Stainless Gauge Ruler	Stainless Gauge Ruler <ul style="list-style-type: none">Stainless SteelLength: 1.0m /1.2m	10	no.	P 17,896.15	P 178,961.50

FIBER LINK TO MAIN FIBER OPTIC INFRASTRUCTURE						
A2.1	L2 + Ring Managed Gigabit Ethernet Switch	L2+ Ring Managed Gigabit Ethernet Switch IP30 Industrial 6* 100/1000X SFP + 2* 16/2.5G SFP + 2*10/100/1000T Full Managed Ethernet Switch (-40 to 75 degrees C, dual redundant power input on 12~48VDC terminal block, ERPS Ring, 1588, Modbus TCP, Cybersecurity features, IPv4/IPv6 Static Routing, CloudViewer app and MQTT, supports 100FX, 1000X and 2.5G SFP)	40	no.	₹ 87,733.33	₹ 3,509,333.20
A2.2	48V, 480W Power Supply	480W Power Supply > Universal AC input full operation > Built-in active PFC function > Protection features: short circuit, overload, over voltage and over temperature > Cooling by free air convection > DIN rail TS-35/7.5 or 15 installation > UL 508 (industrial control equipment) approved > EN61000-6-2 (EN50082-2) industrial immunity leve > 100% full load burn-in test	40	no.	₹ 34,675.56	₹ 1,387,022.40
A2.3	2500BASE-X SFP Transceiver	Mini GBIC 2.5G SFP Module > Up to 2.5Gbps data links > Duplex/Single LC connector > Single power supply of 3.3V > TTL signal detection indicator > Hot pluggable > Supports DDM (digital diagnostic monitoring) > Wide operating temperature from -40 degrees C to 85 degrees C > Monitoring interface compliant with SFF-8472 > Plug and Play configuration	80	no.	₹ 12,951.11	₹ 1,036,088.80
A2.4	1000BASE-SX/LX SFP Transceiver	Mini GBIC SFP Module > Complies with the IEEE 802.3ab/802.3z Gigabit Ethernet standard > One 1000Mbps TP/LC fiber port > Duplex/Single LC connector > Differential PECL inputs and outputs > Single power supply 3.3V > TTL signal detection indicator > Hot pluggable > Class 1 laser product complies with EN 60825-1 > Plug and Play installation	240	no.	₹ 4,595.56	₹ 1,102,934.40
16-PORT INDUSTRIAL POE+ SWITCH						
A3.1	L3 Industrial 16-Port 10/100/1000T 802.3at PoE + 4-Port 16/2.5G SFP Managed Ethernet Switch	16-port Industrial PoE+ Managed Ethernet Switch IP30 DIN-rail Industrial L3 16-Port 10/100/1000T 8023at PoE + 4-port 16/2.5G SFP Full Managed Switch (-40 to 75 C, dual redundant power input on 48~56VDC terminal block, DDO, ERPS Ring, 1588, Modbus TCP, ONVIF, Cybersecurity features, Hardware layer3 OSPFv2, supports MQTT, supports 100FX, 1000X and 2.5G SFP)	40	no.	₹ 215,991.11	₹ 8,639,644.40
A3.2	48V, 480W Power Supply	480W Power Supply > Universal AC input full operation > Built-in active PFC function > Protection features: short circuit, overload, over voltage and over temperature > Cooling by free air convection > DIN rail TS-35/7.5 or 15 installation > UL 508 (industrial control equipment) approved > EN61000-6-2 (EN50082-2) industrial immunity leve > 100% full load burn-in test	40	no.	₹ 34,675.56	₹ 1,387,022.40
A3.3	1000BASE-SX/LX SFP Transceiver	Mini GBIC SFP Module > Complies with the IEEE 802.3ab/802.3z Gigabit Ethernet standard > One 1000Mbps TP/LC fiber port > Duplex/Single LC connector > Differential PECL inputs and outputs > Single power supply 3.3V > TTL signal detection indicator > Hot pluggable > Class 1 laser product complies with EN 60825-1 > Plug and Play installation	40	no.	₹ 4,595.56	₹ 183,822.40

8-PORT INDUSTRIAL POE+ SWITCH					
A4.1	Industrial L3 8-Port 10/100/1000T 802.3bt Poe + 2-Port 1G/2.5G SFP + Managed Ethernet Switch	8-port Industrial Poe+ Managed Ethernet Switch IP30 DIN-rail Industrial L3 8-Port 10/100/1000T 802.3bt Poe + 2-port 1G/2.5G SFP Full Managed Switch (-40 to 75 C, 8-port 95W Poe++, 802.3bt/PoH/Force modes, dual redundant power input on 48~56VDC terminal block, DDO, ERPS Ring, 1588 PTP TC, Modbus TCP, ONVIF, Cybersecurity features, Hardware Layer3 OSPFv2 and IPv4/IPv6 Static Routing, supports MQTT, supports 100FX, 1000X and 2.5G SFP)	63	no.	₹ 151,653.33 ₹ 9,554,159.79
A4.2	48V, 480W Power Supply	480W Power Supply > Universal AC input full operation > Built-in active PFC function > Protection features: short circuit, overload, over voltage and over temperature > Cooling by free air convection > DIN rail TS-35/7.5 or 15 installation > UL 508 (industrial control equipment) approved > EN61000-6-2 (EN50082-2) industrial immunity leve > 100% full load burn-in test	63	no.	₹ 34,675.56 ₹ 2,184,560.28
A4.3	1000BASE-SX/LX SFP Transceiver	Mini GBIC SFP Module > Complies with the IEEE 802.3ab/802.3z Gigabit Ethernet standard > One 1000Mbps TP/LC fiber port > Duplex/Single LC connector > Differential PECL inputs and outputs > Single power supply 3.3V > TTL signal detection indicator > Hot pluggable > Class 1 laser product complies with EN 60825-1 > Plug and Play installation	63	no.	₹ 4,595.56 ₹ 289,520.28
FIBER CORE AND DISTRIBUTION SWITCH					
A5.1	L3 46-Port 100/1000BASE-X SFP + 2-Port Gigabit TP/SFP + 4-Port 10G SFP + Managed Switch	48-Port SFP+ Managed Switch L3 46-Port 100/1000BASE-X SFP + 2-Port Gigabit TP/SFP + 4-Port 10G SFP+ Managed Switch	2	no.	₹ 238,133.33 ₹ 476,266.66
A5.2	Layer 2+ 24-Port 10/100/1000T + 4-Port 10G SFP+ Stackable Managed Switch	24-port Managed Ethernet Switch L2+ 24-Port 10/100/1000T + 4-Port 10G SFP+ Stackable Managed Switch (Hardware Layer3 IPv4/IPv6 Static Routing, ERPS Ring, hardware stacking up to 6 units, IP clustering up to 16 units)	2	no.	₹ 83,973.33 ₹ 167,946.66
A5.3	1000BASE-SX/LX SFP Transceiver	Mini GBIC SFP Module > Complies with the IEEE 802.3ab/802.3z Gigabit Ethernet standard > One 1000Mbps TP/LC fiber port > Duplex/Single LC connector > Differential PECL inputs and outputs > Single power supply 3.3V > TTL signal detection indicator > Hot pluggable > Class 1 laser product complies with EN 60825-1 > Plug and Play installation	100	no.	₹ 4,595.56 ₹ 459,556.00
HARDWARE AND ACCESSORIES					
A6.1	Outdoor Enclosure	NEMA 3R Enclosure Dimension: H: 400mm x W: 400mm x D: 200mm Material: 1.5mm THK Pole-mounted Outdoor-type With DIN Rail inside in mounting plate Powdercoated Finish with pole mounting accessories, circuit breaker, earth grounding, lightning and surge protection device	103	no.	₹ 146,222.22 ₹ 15,060,888.66
SUBTOTAL				₹ 69,335,287.93	

B. WATER-LEVEL MONITORING AND IP-BASED PUBLIC ADDRESS SYSTEM					
ITEM	DESCRIPTION	QTY	UOM	UNIT PRICE	TOTAL PRICE
WATER-LEVEL SENSORS - VISUALIZATION AND SERVICES					
B1.1	Ultrasonic Proximity Device (20 meters)	50	no.	₱ 243,917.95	₱ 12,195,897.50
	<ul style="list-style-type: none"> > LoRaWAN® compatible Level Monitor > Optimized as IoT end-node > Sensors Integrated > Precision Weather Resistant, Ultrasonic > Range Detector > Notification when unit gets disconnected to power source > Battery backup – LiFePO4 > Fit for outdoor installation > with complete pre-fabricated 3D printed brackets for pole mounting accessories 				
B1.2	Network and Connectivity Fees	3	llic/yr	₱ 28,923.08	₱ 86,769.24
	Network and Connectivity Fees Registration and LoRaWAN connectivity (15 minute frequency interval) 50 Devices @ Three (3) years subscription				
B1.3	Web Visualization Dashboard	50	set	₱ 2,410.26	₱ 120,513.00
	Web Visualization Dashboard > Dashboard Creation > Asset Management > Device Asset Mapping > Device Grouping > Device Geo-positioning > Device plane-positioning > Dashboard mapping > Alert configuration > Notification channel configuration				
B1.4	Platform Subscription	3	llic/yr	₱ 530,256.41	₱ 1,590,769.23
	Platform Subscription Web-based Basic Dashboard Monitoring Features > Real-time visualization > Real-time In-app notification > Downloadable data reports > Dashboard and Device Management > Shareable Dashboard > Incident Management > Email Notification > 3-year Data Retention				
B1.5	Technical Support and IoT Maintenance	3	llic/yr	₱ 462,769.23	₱ 1,388,307.69
	Technical Support and IoT Maintenance > Supports up to 3 Cloud Server Instance > Server Issues > Technical Consultation > Max 10 hrs/month Platform Technical Support > Configuration Updates > Max 10 hrs/month				
IP-BASED PUBLIC ADDRESS SYSTEM					
B2.1	IP Speaker	40	no.	₱ 54,990.00	₱ 2,199,600.00
	IP Speaker > Network broadcast; playing audio file or real-time audio stream > SD card broadcast; playing audio files from SD card > Supports two-way talk between remote computer and horn speaker. > On-the spot sound collection; remote computer can collect the real-time sound around the horn speaker.				
8-PORT INDUSTRIAL POE+ SWITCH					
B3.1	Industrial I3 8-Port 10/100/1000T 802.3bt PoE + 2-Port 1G/2.5G SFP + Managed Ethernet Switch	10	no.	₱ 151,653.33	₱ 1,516,533.30
	8-port Industrial PoE+ Managed Ethernet Switch IP30 DIN-rail Industrial I3 8-Port 10/100/1000T 802.3bt PoE + 2-port 1G/2.5G SFP Full Managed Switch (-40 to 75 C, 8-port 95W PoE+, 802.3bt/PoH/Force modes, dual redundant power input on 48--56VDC terminal block, DIDO, ERPS Ring, 1588 PTP TC, Modbus TCP, ONVIF, Cybersecurity Features, Hardware Layer3 OSPFv2 and IPV4/IPV6 Static Routing, supports MQTT, supports 100FX, 1000X and 2.5G SFP)				

B3.2	48V, 480W Power Supply	480W Power Supply > Universal AC input full operation > Built-in active PFC function > Protection features: short circuit, overload, over voltage and over temperature > Cooling by free air convection > DIN rail TS-35/7.5 or 15 installation > UL 508 (industrial control equipment) approved > EN61000-6-2 (EN50082-2) industrial immunity level > 100% full load burn-in test	10	no.	₱ 34,675.56	₱ 346,755.60
B3.3	1000BASE-SX/LX SFP Transceiver	Mini GBIC SFP Module > Complies with the IEEE 802.3ab/802.3z Gigabit Ethernet standard > One 1000Mbps TP/LC fiber port > Duplex/Single LC connector > Differential PECL inputs and outputs > Single power supply 3.3V > TTL signal detection indicator > Hot pluggable > Class 1 laser product complies with EN 60825-1 > Plug and Play installation	20	no.	₱ 4,595.56	₱ 91,911.20
HARDWARE AND ACCESSORIES						
B4.1	Outdoor Enclosure	NEMA 3R Enclosure Dimension: H: 400mm x W:400mm x D:200mm Material: 1.5mm THK Pole-mounted Outdoor-type With DIN Rail inside in mounting plate Powdercoated Finish with pole mounting accessories, circuit breaker, earth grounding, lightning and surge protection device	10	no.	₱ 146,222.22	₱ 1,462,222.20
B4.2	HDG Camera Steel Pole	HDG Camera Steel Pole Overall Height: 5 meters to 9 meters (as per site condition) Material: Hot-Dipped Galvanized Thickness: 4mm or thicker Diameter: 4 inch or bigger Concrete Foundation: 350mm x350mm x 900mm	10	no.	₱ 75,200.00	₱ 752,000.00
					SUBTOTAL	₱ 21,751,278.96

C. VIDEO MANAGEMENT SYSTEM AND SERVER STORAGE						
		DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
VIDEO MANAGEMENT SYSTEM						
C1.1	Server	Server 4210R×1/16G DDR4×2/1TB 7.2K SATA×2(RAID_1)/SAS_H330/1GbE×4/Win Svr 2019 495W(1+1)/2U/24DIMM/3 years global platinum service	1	no.	₱ 1,381,941.00	₱ 1,381,941.00
C1.2	Video Base License	Video Base License Video Surveillance Base package - Including prerequisites for channel expanding, all fundamental features of video surveillance system and 300 cameras manageable. Supported:2 years free SLP/Main/Auxiliary Storage,Alarm Management,Google Map,Evidence Management, Running on Virtual Machine, 100 Users Logged In Simultaneously,Health Monitoring/History Maintenance Data, Client Operation (e.g Visual Tracking, Custom Window Division),etc.	1	no.	₱ 1,294,922.31	₱ 1,294,922.31
C1.3	Video Channel License	Video Channel License Video Surveillance Expansion package. Prerequisite:Video Surveillance Base package. Supported:1 camera manageable.	550	no.	₱ 5,820.77	₱ 3,201,423.50
C1.4	IP Speaker License	IP Speaker-Module Licence description : Basic module for using speakers, 2 speaker licenses included Analyzes : depending on the camera Licence category : Base licence	1	no.	₱ 5,820.77	₱ 5,820.77
C1.5	AR Function	AR Module Video Surveillance Expand package Prerequisite:Video Surveillance Base package Warranty:None Supported: -AR Module	1	no.	₱ 152,421.00	₱ 152,421.00

C1.6	AR Function	AR 15 Scene Technical Description @ Video Surveillance Expand package Prerequisite: Video Surveillance Base package Warranty: None Supported: 1 Scene manageable, the scene has contain a set management of high-point camera(s), tags, etc. 2 VSS channel manageable, the camera(s) installed as AR high-point camera(s), does not need to pay extra vss fee.	5	no.	₱ 30,268.00	₱ 151,340.00
SERVER STORAGE - SMART NVR						
C1.7	Smart NVR	Smart NVR Smart NVR 16x Bay (empty) chassis with16 cores, 64GB RAM, 2x 240GB M.2 SSD, 4x 1GbE + 2x 10GbE ports, 5Y 5x9xNBD standard warranty with NRD	7	no.	₱ 7,787,433.17	₱ 54,512,046.19
C1.8	16TB SATA HDD	SATA HDD 16TB Non-SED SATA HDD	126	no.	₱ 249,461.54	₱ 31,432,154.04
C1.9	Support for NVR	Support for NVR Support Plan, NBD Gold (7x24xNBD), annual, all zones per chassis; Support Plan, NBD Gold (7x24xNBD), annual, all zones	7	no.	₱ 1,062,509.89	₱ 7,437,569.23
C1.10	Support for HDD	Support for HDD SATA Drive Support Gold NBD Annual	126	no.	₱ 27,476.92	₱ 3,462,091.92
C1.11	Management Base Module	Management Base Module Management package module of cluster storage system, recommended to be used for 4-10storage node including management of capacity virtualization, clustering management, load balancing, Direct streaming from IPC to virtualized storage and provision of unified video and picture storage. By default with 1PB storage capacity management license included	1	no.	₱ 833,020.77	₱ 833,020.77
C1.12	Cluster Storage Capacity Expansion	Cluster Storage Management Module Cluster storage capacity expansion unit of Management base module of Cluster storage system, 1TB capacity expansion for capacity over 1PB.	2016	no.	₱ 1,012.31	₱ 2,040,816.96
					SUBTOTAL	₱ 105,905,567.69

D. PC WORKSTATION						
ITEM	PARTICULARS	DESCRIPTION	QTY	UOM	UNIT PRICE	TOTAL PRICE
LAPTOP / WORKSTATION / PC DESKTOP						
D1.1	PC Workstation	PC Workstation Intel® Xeon™ W-1350/16GB MEM/512GB M.2 SSD/1TB/RTX 1600 4GB/KB/Mouse/Win11Pro/500W or benchmark equivalent Windows 10 Professional 64-Bit	2	no.	₱ 323,295.73	₱ 646,591.46
D1.2	27" IPS Monitor	27" IPS Monitor Resolution 1920 x 1080 165 Hz Refresh rate 100 million:1 max contrast ratio 99% sRGB Color Gamut	4	no.	₱ 37,278.63	₱ 149,114.52
D1.3	PC Desktop	PC Desktop AMD Ryzen™ 5 5600G/8GB MEM/256GB M.2 SSD/1TB/KB/Mouse/Win11Pro/500W	5	no.	₱ 195,712.82	₱ 978,564.10
D1.4	27" IPS Monitor	27" IPS Monitor Resolution 1920 x 1080 165 Hz Refresh rate 100 million:1 max contrast ratio 99% sRGB Color Gamut	10	no.	₱ 37,278.63	₱ 372,786.30
D1.5	15.6" Laptop	Laptop Intel Core i5-1135G7 Processor, Base Frequency2.40GHZ, 8MB Cache, 4Cores, 8Threads, Turbo Frequency4.20GHZ, 11th Generation	5	no.	₱ 151,042.74	₱ 755,213.70
COMMAND CENTER CONSOLE WORKSTATION TABLE AND CHAIRS						
D2.1	Custom Console Workstation	Custom Console Workstation Custom Console Workstation	12	no.	₱ 96,410.26	₱ 1,156,923.12

D2.2	Low-Back Swivel Chair	Low-Back Swivel Chair Black, Lowback, ergonomic type, gaslift mechanism, adjustable height, mesh black, with armrest	12	no.	₱ 38,564.10	₱ 462,769.20
SUBTOTAL					₱ 4,521,962.40	

E. CONGEN DATA CENTER						
ITEM	PARTICULARS	DESCRIPTION	QTY	UOM	UNIT PRICE	TOTAL PRICE
E1.1	3TR Precision Airconditioning Unit (PACU) - Freeblow Type	PACU 3TR Precision Airconditioning Unit (PACU) - Freeblow Type	1	lot	₱ 5,141,880.34	₱ 5,141,880.34
E1.2	15KVA Rackmount UPS	15KVA Rackmount UPS Includes: - (1) 15KVA/15KW(2U) On-Line UPS, without battery pack, incl. ear bracket/ tower stand/ terminal/ battery, Parallel, USB cables - (4) External Battery Pack(3U), 1 string of 12V9Ahx20pcs - (1) MINI SNMP IPv6 CARD (SWAPPABLE) - (5) Rail kit	1	set	₱ 1,285,470.09	₱ 1,285,470.09
E1.3	FM200 / HFC227EA Fire Suppression System/ SG FIRE SYSTEM	Fire Suppression FM200 / HFC227EA Fire Suppression System/ SG FIRE SYSTEM	1	lot	₱ 3,856,410.26	₱ 3,856,410.26
SUBTOTAL					₱ 10,283,760.69	

F. GENERAL SERVICES						
ITEM	PARTICULARS	DESCRIPTION	QTY	UOM	UNIT PRICE	TOTAL PRICE
F1.1	Hardware and Accessories	Use of Heavy-Equipment and Machinery, Specialty Tools, and Professional Services	1	no.	₱ 8,371,616.17	₱ 8,371,616.17
F1.2	Hardware and Accessories	Wires, Cables, Connectors, Racks, Hardware and Consumables Roughing-ins Materials and fixing supports	1	lot	₱ 34,836,239.32	₱ 34,836,239.32
F1.3	Services	Fire Suppression Supply of Conduits and Wires and other Local Materials/Items to Complete the Systems. Labor for Installation of Imported Equipments Devices, Roughing-ins, Wirlings and other Materials to Complete the	1	lot	₱ 964,102.56	₱ 964,102.56
F1.4	Services	PACU Testing & Commissioning (7x24) * 1 Year Warranty Preventive Maintenance (Quarterly Visit) Project Management * Mechanical Works (Maximum of 30 Meters pipe length)	1	lot	₱ 1,606,837.61	₱ 1,606,837.61
F1.5	Services	Labor and Installation	1	lot	₱ 30,832,000.00	₱ 30,832,000.00
F1.6	Services	Training, Support, Documentation and Handover	1	lot	₱ 4,981,196.58	₱ 4,981,196.58
F1.7	Services	Project Management and T&C	1	lot	₱ 12,533,688.44	₱ 12,533,688.44
SUBTOTAL					₱ 94,125,680.68	
GRAND TOTAL					₱ 305,923,538.35	

XII. PROJECT MILESTONES AND PAYMENT SCHEDULES

Milestones	Description
Contract Downpayment	15% < downpayment shall be paid to the winning bidder upon issuance of Notice to Proceed (NTP) and upon submission of required project documents such as but not limited to; 1. Project Schedule 2. Project Shop Drawings
Delivery of Equipment	30% payment shall be paid to the winning bidder upon completion of delivery of equipment
Cable Installation	15% payment shall be paid to the winning bidder upon completion of cable installation
Device Installation	20% payment shall be paid to the winning bidder upon completion of device installation
Functional Testing and Commissioning	10% payment shall be paid to the winning bidder upon completion of functional testing and commissioning
Acceptance and Project Close-Out	10% payment shall be paid to the winning bidder upon acceptance and project close-out

XIII. APPROVED BUDGET

The approved budget for the Design, Supply, Delivery, Installation, Testing and Commissioning of QCDRRMO Surveillance System Project is Three Hundred Five Million Nine Hundred Twenty-Three Thousand Five Hundred Thirty-Eight Thirty-Five Centavos (Php 305,923,538.35)

XIV. GROUNDS FOR TERMINATION OF CONTRACT

The following are ground for termination of contract:

- a. Pursuant to Sec.68 of the 2016 revised IRR of RA 9181, the procuring entity may terminate the contract when out of force majeure, the supplier/winning bidder fails to deliver or perform any or all of the Goods within the period(s) specified in the contract, or within any extension thereof granted by the Procuring Entity (QC LGU) pursuant to a request made by the supplier/winning bidder prior to the delay, and

such failure amounts to at least ten percent (10%) of the contract price.

- b. Pursuant to Sec. 68 of the 2016 revised IRR of RA 9184, the Procuring Entity (QC LGU) may terminate the contract when, as a result of force majeure, the supplier/winning bidder is unable to deliver or perform any or all of the Goods, amounting to at least ten percent (10%) of the contract price, for a period of not less than sixty (60) calendar days after receipt of the notice from the Procuring Entity stating that the circumstance of force majeure is deemed to have ceased.
- c. The Procuring Entity (QC LGU) shall terminate contract when the supplier fails to perform any other obligation under the contract.

XV. LIQUIDATED DAMAGES

The amount of liquidated damages shall be at least equal to one-tenth of one percent (0.001) of the cost of the unperformed portion for every day of delay. Once the cumulative amount of liquidated damages reaches ten percent (10%) of the amount of contract, the Procuring Entity (QC LGU) may rescind or terminate the contract, without prejudice to other courses of action and remedies available under the circumstances.

Prepared and recommended by:



CHERRY BLESSING M. GUTIERREZ
Chief/ Admin and Finance, QCDRRMO

Noted by:



RICARDO T. BELMONTE JR.
Officer in Charge, QCDRRMO