

BILL OF QUANTITIES (FIRE DETECTION & ALARM SYSTEM)**NAME OF WORK: CONSTRUCTION OF ADMINISTRATIVE OFFICE BUILDING FOR DEENDAYAL PORT AUTHORITY, KANDALA**

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
1.00	FIRE ALARM CONTROL PANEL				
	Supply, installation, testing and commissioning of FM approved and UL listed microprocessor- based, true peer-to-peer networkable, four Loop addressable Fire Alarm Control Panel (FCAP) with its own microcontroller memory, communication module, fire device loop interface cards for intelligent initiating and indicating devices and peer-to-peer networkable with other addressable fire alarm panels. conforming to UL 2572 mass notification systems & NFPA 72, with required accessories complete all as specified and directed by the engineer-in-charge.				
	The FACP shall meet the following specifications / functional requirements.				
	[i] The FACP shall have one to ten isolated intelligent Signalling Line Circuits (SLCs) capable of connecting up to 159 detectors and 159 modules per SLC or 318 devices per loop.				
	[ii] The FACP shall have a degrade mode and the loops shall work in degrade mode in case of the CPU failure.				
	[iii] The FACP shall have 640 character LCD backlit display/ Touch Screen display, full QWERTY program keypad, LED indicators viz. power; fire alarm; supervisory; system trouble; other event; signals silenced; point disabled; CPU failure; controls active; etc. membrane switch controls viz. acknowledge; signal silence; drill; system reset; lamp test; etc				
	[iv] The FACP shall have four access levels, flash EPROM, 240 VAC power supply, automatic battery charger, 24 V sealed lead acid batteries, sufficient for 24 hrs normal working and 30 min in alarm condition.				

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	[v] The FACP shall have manual sensitivity adjustment up to nine levels, built-in alarm; trouble; security and supervisory relays, history file with 4000-event capacity in non-volatile memory plus separate 1000-event alarm-only file, keypad operation, LCD unit to indicate fire / fault signal of individual unit, in built printer to log all incoming data, etc.				

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	[vi] The FACP shall have integrated 8 channel digital voice evacuation system controller capable of broadcasting evacuation messages on the same peer-to-peer network, fire fighter's telephone two-way communication system capable of supervising all the speaker circuits with adequate zone control and accessories etc.				
	NOTES:				
	[i] The FACP shall be servicable by any system integrator & shall not have dependency on specific system integrator.				
	[ii] The FACP shall have feature to "ADD", "EDIT" & "DELETE" field devices like detectors & modules without dependency on PC / Software / Special tool / dongle.				
1.01	Supply of Fire Alarm Control Panel (FACP)	1	Each		
1.02	Installation, testing and commissioning for Fire Alarm Control Panel (FACP)	1	Job		
2.00	NETWORK CONTROL DISPLAY				
	Supply, installation, testing and commissioning of FM approved and UL listed Network Control Display (NCD) capable of full supervision of all inputs and network integrity, having 10" high definition 1024 X 600 colour touchscreen display, environmental adjustment controls to maximize LCD legibility, LED status indicators (for power supply and off normal condition), network connection, three USB connections, trouble relay, tamper and trouble inputs, etc. and features viz. network-wide acknowledge silence, reset, lamp test, fully programmable node-mapping subsystem, colour coded icon based event notification, event vectoring, etc. along with UL listed non-resettable 24 VDC power source complete all as specified and directed by the engineer-in-charge.				
2.01	Supply of Network Control Display (NCD)	1	Each		
2.02	Installation, testing and commissioning for Network Control Display (NCD)	1	Each		

Sl. No.	Description	Qty.	Unit	Rate	Amount
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3.00	SMOKE DETECTOR				
	Supply, installation, testing and commissioning of FM approved and UL listed intelligent plug-in photoelectric smoke detector, conforming to UL 268 7th Edition, sealed against back pressure, with sensitivity range 0.5 % to 4.0 % per foot obscuration, two-wire SLC connection, fixed-temperature setpoint 135°F (57°C), built-in functional test switch activated by external magnet, built-in tamper resistant feature, remote test feature from the panel, dual LED design providing 360° viewing angle, visible bi-colour LEDs blink green every time the detector is addressed, and illuminate steady red on alarm, compatible with FlashScan® and CLIP protocol systems, Rotary, decimal addressing, etc. and having the ability to combine temperature thermal sensing with optical sensing, complete with all accessories viz. base, base box, etc. to be installed below / above false ceiling, roof and concealed space, etc. complete all as specified and directed by the engineer-in-charge.				
3.01	Supply of intelligent plug-in photoelectric smoke detector	697	Each		
3.02	Installation, testing and commissioning intelligent plug-in photoelectric smoke detector	697	Each		
4.00	RESPONSE INDICATOR				
	S & F flush / ceiling wall mounted remote response indicator to duplicate detector alarm latching LED(s), compatible for two wire detectors, having 12 VDC operating voltage, dual LEDs for 360° visibility in case the detector is placed above the false ceiling / inside closed room complete all as specified and directed by the engineer-in-charge.				
4.01	Supply of remote response indicator	26	Each		
4.02	Installation, testing and commissioning remote response indicator	26	Each		
5.00	FAULT ISOLATOR				
	Supply, installation, testing and commissioning of FM approved and UL listed fault isolator module powered by SLC loops directly to protect system against wire-to-wire short circuits on the SLC loops by limiting the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC loop, having integral LED indicators, high noise immunity, SEMS screws with clamping plates for ease of wiring complete all as specified and directed by engineer-in-charge.				

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	NOTES:				
	[i] The Fault Isolator Module shall not require any address-setting, and its operations shall be totally automatic.				
	[ii] It shall not be necessary to replace or reset an Fault Isolator Module after its normal operation.				
5.01	Supply of fault isolator module	3	Each		
5.02	Installation, testing and commissioning fault isolator module	3	Each		
6.00	CONTROL MODULE				
	Supply, installation, testing and commissioning of FM approved and UL listed addressable control module to provide FACP a circuit for notification appliances (e.g. Horns, Strobes, Horn Strobes, etc.) having built-in type identification, integral LED indicators, high noise immunity, SMES screws with clamping plates for wiring ease, direct-dial entry of address, etc. complete all as specified and directed by engineer-in-charge.				
6.01	Supply of addressable control module	18	Each		
6.02	Installation, testing and commissioning addressable control module	18	Each		
7.00	MANUAL CALL POINT				
	Supply, installation, testing and commissioning of FM approved and UL listed surface / semi- flush mounted Dual Action Manual Pull Station "Push In & Pull Down" including an addressable interface for the intelligent FACP having built-in bicolour LED which is visible, flashing in normal operation and latching steady red in alarm condition, captive screw terminals wire-ready for easy connection to SLC loop complete all as specified and directed by engineer-in-charge.				
7.01	Supply of surface / semi- flush mounted Dual Action Manual Pull Station	18	Each		
7.02	Installation, testing and commissioning surface / semi-flush mounted Dual Action Manual Pull Station	18	Each		
8.00	HORN STROBE				

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
	Supply, installation, testing and commissioning of UL listed of Horn Strobe, wired as a primary notification appliance, flashing 75 cd at 1 Hz over the strobe's entire operating voltage range, xenon flash tube and associated lens / reflector system, built-in synchronization feature keeping strobes in sync for up to 30 minutes, horn producing audible annunciation of 75 dBA at 3 m distance complete all as specified and directed by engineer-in-charge.				
8.01	Supply of Horn Strobe	18	Each		
8.02	Installation, testing and commissioning Horn Strobe	18	Each		
9.00	REMOTE POWER SUPPLY				
	Supply, installation, testing and commissioning of FM approved & UL listed remote power supply conforming to UL 864 & 1481 and NFPA 72 with integral battery charger capable of charging up to 18 Ah batteries to provide regulated and filtered 24 VDC power to notification appliance circuits, having power-supervision relay, fully regulated and filtered power output, AC trouble report selectable for immediate 2-hour delay, selectable earth fault detection, etc. complete all as specified and directed by engineer-in-charge.				
9.01	Supply of remote power supply	1	Each		
9.02	Installation, testing and commissioning remote power supply	1	Each		
10.00	TELEPHONE JACK				
	Supply, installation, testing and commissioning of UL listed (fire fighter's) addressable Telephone Jack mounted to a single-gang electrical back box with suitable interface module for two way communication with the Central Fire Fighter Telephone Console complete all as specified and directed by engineer-in-charge.				
10.01	Supply of (fire fighter's) addressable Telephone Jack	3	Each		
10.02	Installation, testing and commissioning (fire fighter's) addressable Telephone Jack	3	Each		
11.00	TELEPHONE HANDSET				
	Supply, installation, testing and commissioning of UL listed Fire Fighter's Telephone Handset for two way communication with the Central Fire Fighter Telephone Console complete all as specified and directed by engineer-in-charge.				
11.01	Supply of Fire Fighter's Telephone Handset	3	Each		
11.02	Installation, testing and commissioning Fire Fighter's Telephone Handset	3	Each		

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12.00	FIRE ALARM CABLE				
	M & L for low smoke zero halogen (LS0H) flame retardant fire alarm cable, conforming to BS 7629-1, BS 6387 & BS EN 50200 and rated for 500 V, drawn through concealed PVC conduit and having plain annealed stranded copper conductor with primary insulation of glass mica fire resistant tape and secondary insulation of high performance silicone rubber, earth/drain wire of annealed tinned copper, electrostatic screen of aluminium fire barrier and type LTS3 outer sheath conforming to BS 7655, suitable for operating temperature range -30 °C to +70 °C and minimum bending radius being 6 times the overall cable diameter, RED in colour, including laying, termination and ferruling complete all as specified and directed by engineer-in-charge.				
12.01	Supply of 2 core, 1.5 mm ² fire alarm cable	6970	RM		
12.02	Labour of 2 core, 1.5 mm ² fire alarm cable	6970	RM		
12.03	Supply of 2 core, 2.5 mm ² (supply to hooter/strobe)	180	RM		
12.04	Labour of 2 core, 2.5 mm ² (supply to hooter/strobe)	180	RM		
13.00	SPEAKER CABLE				
	M & L for transparent FR PVC insulated, twin core copper conductor flexible industrial Speaker cable, drawn through concealed PVC conduit, having stranded annealed tinned copper conductor, PVC insulated cores twisted to form pairs, shielded for interference rejection, unarmoured PVC sheathed 1.1 kV grade in conductor size 2 X 1.0 mm ² including laying, termination and ferruling complete all as specified and directed by engineer-in-charge.				
13.01	Supply of transparent FR PVC insulated, twin core copper conductor flexible industrial Speaker cable	3960	RM		
13.02	Labour for transparent FR PVC insulated, twin core copper conductor flexible industrial Speaker cable	3960	RM		
14.00	CEILING SPEAKER				
	Supply, installation, testing and commissioning of UL listed all purpose 2 W ceiling speaker having crush and rust resistant design and fully ABS plastic & ABS grille with tap-setting range between 1/4 W and 2 W, rated (RMS) voltage 70.7 V, sound pressure level at 1 W (1 m & 1 kHz) 80 ± 4 dB, frequency response 125 Hz- 16 kHz, (-10 dB with reference to 1 kHz), complete all as specified and directed by engineer-in-charge.				
14.01	Supply of 2 W ceiling speaker	396	Each		

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14.02	Installation, testing and commissioning for 2 W ceiling speaker	396	Each		
15.00	DIGITAL AUDIO AMPLIFIER				
	Supply, installation, testing and commissioning of UL listed Digital Audio Amplifier capable of accessing and processing one of up to eight audio channels on the DVC audio loop, amplifying the signal and distributing it via eight Class B (speaker line) outputs having two wire digital audio ports to connect to wire DAL (digital audio loop) segments, Firefighter telephone riser supporting 7 active firefighter telephones, 300 W total output at 70 V (RMS) complete all as specified and directed by engineer-in-charge.				
15.01	Supply of Digital Audio Amplifier	1	Each		
15.02	Installation, testing and commissioning for Digital Audio Amplifier	1	Each		
16.00	HEAT DETECTOR				

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
	Supply, installation, testing and commissioning of FM approved and UL listed intelligent plug-in intelligent thermal detector, two-wire SLC connection, fixed-temperature setpoint 135 °F (57 °C), rate of temperature rise 15 °F (8.3 °C) per minute, built-in functional test switch activated by external magnet, built-in tamper resistant feature, remote test feature from the panel, dual LED design providing 360° viewing angle, visible bi-colour LEDs blink green every time the detector is addressed, and illuminate steady red on alarm, compatible with FlashScan® and CLIP protocol systems, rotary & decimal addressing, etc. complete with all accessories viz. base, base box, etc. to be installed below / above false ceiling, roof and concealed space, etc. complete all as specified and directed by the engineer-in-charge.				
16.01	Supply of intelligent plug-in intelligent thermal detector, two-wire SLC connection, fixed-temperature set	3	Each		
16.02	Installation, testing and commissioning for intelligent plug-in intelligent thermal detector, two-wire SLC connection, fixed-temperature set	3	Each		
17.00	SIGNAGE				
	S & F of the following type of signages made out of 3 mm thick opaque PVC foam board with computer cut, PVC non-reflective self adhesive vinyl painted foam board, complete with mirror fasteners as specified and directed by the engineer-in-charge.				
17.01	Sign of size 250 mm X 300 mm reading 'IN CASE OF FIRE, USE STAIRS UNLESS INSTRUCTED OTHERWISE' in 12.5 mm block letters in red and white background, properly spaced to provide good legibility located directly above the call-button and squarely attached to the wall or partition in a way that the top of the sign is not above 2 m from the finished floor level	12	Each		

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
17.02	Sign of size 150 mm X 600 mm, posted and maintained within each stair enclosure on every floor, indicating the number of the floor in bold type and at 75 mm high numerals in red and white background, securely attached to the stair side of the door in a way that the bottom of the sign is not above 1.5 m from the finished floor level	12	Each		
17.03	Sign of size 150 mm X 600 mm, posted and maintained at each lift landing and on the side of the stairway door from which egress is to be made on every floor, indicating the lift / lift bank / stairway by an alphabetical letter in bold type and at 75 mm high letters in red and white background, securely attached to the side of the stairway door from which egress is to be made in a way that the bottom of the sign is not above 1.5 m from the finished floor level	15	Each		
TOTAL					