

BILL OF QUANTITIES (FIRE FIGHTING SYSTEM)					
NAME OF WORK: CONSTRUCTION OF ADMINISTRATIVE OFFICE BUILDING FOR DEENDAYAL PORT AUTHORITY, KANDALA					
Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
1.00	ELECTRIC MOTOR DRIVEN MAIN FIRE PUMP				
	Supply, installation, testing and commissioning of electric motor driven Main Fire Pump to deliver 1620 LPM flowrate at 70 MWC head and suitable for automatic operation and consisting of following, complete with accessories as specified and directed by the engineer-in-charge.				
	[i] Horizontal type, single suction, multi-stage single-outlet pump of cast iron body & stainless steel impeller with stainless steel shaft, mechanical seal, etc. conforming to IS 12469: 2019, suitable to deliver 1620 LPM flowrate at 70 MWC head.				
	[ii] Suitable HP squirrel cage induction motor, TEFC, synchronous speed 3000 RPM, suitable for operation on 3- Ph, 415 V, 50 Hz AC supply with IP 55 protection for enclosure, horizontal foot mounted type with Class 'F' insulation, conforming to IS 12615: 2018 & IS 15301: 2003.				
	[iii] MS fabricated common base-plate, coupling, coupling guard, foundation bolts, etc. complete with accessories as required.				
	[iv] Suitable cement concrete foundation duly plastered with anti vibration pads.				
	Make: Grundfos, Kirloskar, Xylem, Wilo				
	NOTES:				
	[i] The pump shall be capable of furnishing not less than 150% rated capacity at a head of not less than 65% of the rated head.				
	[ii] The shut-off head shall not exceed 120% of rated head.				
	[iii] The coupling guard shall be of zero access type.				
	[iv] The quoted rate shall include providing and fixing of vibration pad, common base plate, foundation bolts, grouting etc.				
	[v] Pump sets shall be as per NFPA-20.				
	[vi] Pump sets shall be installed as per IS 15301: 2003.				
1.01	Supply of Electrical Driven Main Fire Pump to deliver 1620 LPM flowrate at 70 MWC head	1	Each		

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
1.02	Installation, testing and commissioning of Electrical Driven Main Fire Pump to deliver 1620 LPM flowrate at 70 MWC head	1	Job		
2.00	DIESEL ENGINE DRIVEN MAIN FIRE PUMP				
	Supply, installation, testing and commissioning of diesel engine driven main fire pump to deliver 1620 LPM flowrate at 70 MWC head and suitable for automatic operation and consisting of following, complete with accessories as specified and directed by engineer-in-charge.				
	[i] Horizontal type, single suction, multi-stage single - outlet pump of cast iron body & stainless steel impeller with stainless steel shaft, mechanical seal, etc. conforming to IS 12469: 2019, suitable to deliver 1620 LPM flowrate at 70 MWC head.				
	[ii] Suitable HP, 1800 RPM diesel engine, water cooled with radiator, conforming to IS 10002: 1981, complete with auto starting mechanism, 12/24 V electric starting equipment, diesel tank, exhaust pipe extended up to 10 m outside pump house duly insulated with 50 mm thick glass wool with 1.0 mm thick aluminium sheet cladding, residential silencer, instruments and protection as per standard specification, stop solenoid for auto stop in the event of fault with audio indications, painted with post office red colour, etc. as required.				
	[iii] MS fabricated common base-plate, coupling, coupling guard, foundation bolts, etc. complete with accessories as required.				
	[iv] Suitable cement concrete foundation duly plastered with anti vibration pads.				
	Make: Kirloskar, SPP Pumps, Precision Engineering Works				
	Make: Grundfos, Kirloskar, Xylem, Wilo				
	NOTES:				
	[i] The pump shall be capable of furnishing not less than 150% rated capacity at a head of not less than 65% of the rated head.				
	[ii] The shut-off head shall not exceed 120% of rated head.				
	[iii] The coupling guard shall be of zero access type.				
	[iv] The quoted rate shall include providing and fixing of vibration pad, common base plate, foundation bolts, grouting etc.				
	[v] Pump sets shall be as per NFPA-20				
	[vi] Pump sets shall be installed as per IS 15301: 2003				

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
2.01	Supply of Diesel Engine Driven Main Fire Pump to deliver 1620 LPM flowrate at 70 MWC head	1	Each		
2.02	Installation, testing and commissioning of Diesel Engine Driven Main Fire Pump to deliver 1620 LPM flowrate at 70 MWC head	1	Job		
3.00	JOCKEY PUMP				
	Supply, installation, testing and commissioning of electric motor driven Jockey Pump to deliver 180 LPM flowrate at 70 MWC head and suitable for automatic operation and consisting of following, complete with accessories as specified and directed by engineer-in-charge.				
	[i] Horizontal type, single suction, multi-stage single outlet pump of cast iron body & stainless steel impeller with stainless steel shaft, mechanical seal, etc. conforming to IS 12469: 2019, suitable to deliver 180 LPM flowrate at 200 MWC head.				
	[ii] Suitable HP squirrel cage induction motor, TEFC, synchronous speed 3000 RPM, suitable for operation on 3- Ph, 415 V, 50 Hz AC supply with IP 55 protection for enclosure, horizontal foot mounted type with Class 'F' insulation, conforming to IS 12615: 2018.				
	[iii] MS fabricated common base-plate, coupling, coupling guard, foundation bolts, etc. complete with accessories as required.				
	[iv] Suitable cement concrete foundation duly plastered with anti vibration pads.				
	Make: Grundfos, Kirloskar, Xylem, Wilo				
	NOTES:				
	[i] The pump shall be capable of furnishing not less than 150% rated capacity at a head of not less than 65% of the rated head.				
	[ii] The shut-off head shall not exceed 120% of rated head.				
	[iii] The coupling guard shall be of zero access type.				
	[iv] The quoted rate shall include providing and fixing of vibration pad, common base plate, foundation bolts, grouting etc.				
	[v] Pump sets shall be as per NFPA-20				
	[vi] Pump sets shall be installed as per IS 15301: 2003				
3.01	Supply of Jockey Pump to deliver 180 LPM flowrate at 70 MWC head	1	Each		
3.02	Installation, testing and commissioning of Jockey Pump to deliver 180 LPM flowrate at 70 MWC head	1	Job		

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
4.00	FIRE MCC				
	Supply, installation, testing and commissioning of factory made, CPRI / ERDA type tested, fully compartmentalized bolted type Fire MCC (design verified assembly- DVA) of suitable size conforming to IEC 61439-1 & 2 and IEC 61641 and having modular extensible design suitable for indoor mounting, internal arc compliance of minimum 70 kA for 0.5 s, made out of 2.0 mm thick mild steel CRCA sheet, having both sides openable with hinged doors and locking arrangement, IP 43 & IK 10 protection, supported and fixed on structural frame of angle iron of suitable size, including earthing stud, labelling, painting to all internal & external exposed steel surfaces with powder coating paint (7 tank process), duly fixed in ground with PCC foundation (1:2:4) type B1, with danger notice plate of 1.6 mm thick mild steel vitreous enamelled (white) with letters, figures and conventional skull and bones in signal red colour suitable for 3-Phase, 4-Wire system, 500 V grade with necessary wiring, PVC sheathed stranded copper conductor of appropriate length and size, including fixing lugs, bolts, screws, etc. complete all as specified and directed by the engineer-in-charge.				
	Make: ABB, Legrand, L&T E&A, Schneider, Siemens				
	The Fire MCC shall comprise of the following:				
	[A] BUSBAR CHAMBER				
	[i] 01 Set (3L + N) of copper busbar of rated capacity 200 A, covered with PVC insulated sleeves including insulator, nuts, bolts, etc. with complete connection				
	[B] INCOMING				
	[i] Circuit Breaker				
	(a) 200 A, 415 V, Ics = 100% Icu = 36 kA, 50 Hz 3P MCCB, conforming to IEC 60947-2: 2016, having thermal magnetic trip unit, adjustable overload setting, adjustable short-circuit setting, front indication LEDs, etc.- 01 Nos.				
	[ii] Instrumentation & Measurement				
	(a) C1 1.0 multi-function meter capable of measuring V, A, F, PF, W/VA, Wh/VAh, Runhrs. Onhrs & interrupts- 01 Nos.				
	(b) 200/5A Cl. 1.0 C.T. with 10 VA burden- 01 Nos.				
	(c) 6A, 10kA, 415V, 50 Hz 4P MCB- 01 Nos.				

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
	[iii] Indication & Annunciation				
	(a) LED phase indicators (Red, Yellow, Blue)- 01 Set				
	(b) LED status indicators (ON, OFF, TRIP)- 01 Set				

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
	[C] OUTGOING				
	[i] Circuit Breaker				
	(a) 160 A, 415 V, Ics = 100% Icu = 36 kA, 50 Hz 3P MCCB, conforming to IEC 60947-2: 2016, having thermal magnetic trip unit, adjustable overload setting, adjustable short-circuit setting, front indication LEDs, etc.- 02 Nos. (for Main Electric Pump)				
	(b) 32 A, 415 V, Ics = 100% Icu = 36 kA, 50 Hz 3P MCCB, conforming to IEC 60947-2: 2016, having thermal magnetic trip unit, adjustable overload setting, adjustable short-circuit setting, front indication LEDs, etc.- 02 Nos. (for Jockey pump)				
	(c) 32 A, 250 V, Ics = 100% Icu = 36 kA, 50 Hz 2P MCCB, conforming to IEC 60947-2: 2016, having thermal magnetic trip unit, adjustable overload setting, adjustable short-circuit setting, front indication LEDs, etc.- 02 Nos. (for DE Controller)				
	[ii] Motor Starter / Drive				
	(a) Fully automatic digital soft starter suitable for 37 kW drive having adaptive acceleration control, built-in RTD & thermistor inputs, programmable auto start/stop, emergency run operation, fully programmable overload trip, etc. complete with contactors, push button, LED type indicators, auto/manual selector switch, current sensing type single phase preventer complete with all accessories and wiring etc.- 03 Nos.				
	(b) Fully automatic DOL starter, suitable for 5.5 kW motor, complete with contactors, push button, LED type indicators, auto/manual selector switch, overload protection, current sensing type single phase preventer complete with all accessories and wiring etc.- 02 Nos.				
	[ii] Instrumentation & Measurement				
	(a) 200/5A Cl. 1.0 C.T. with 10 VA burden- 02 Nos.				
	(b) 40/5A Cl. 1.0 C.T. with 5 VA burden- 02 Nos.				
	(c) 0-200 A ammeter- 02 Nos.				
	(d) 0-40 A ammeter- 02 Nos.				
	[iii] Indication & Annunciation				
	(a) LED status indicators (ON, OFF, TRIP)- 04 Set				
	NOTES:				
	[i] The busbars shall be of double deck arrangement for rating $\geq 1600\text{A}$ interleaved /non-interleaved design as per OEM. Separation of busbar shall be as per Form 4b.				

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
	[ii] ACBs shall have separately powered, individual fault trip indication LEDs (For overload, short circuit, earth fault and trip-unit failure) shall be available on the trip unit which shall function even in the absence of external power supply to the breaker.ACB shall be suitable for ZSI. Trip units shall have thermal memory as standard.				
	[iii] All the MCCBs up to 250 A shall be with thermal magnetic trip unit & above 250A shall be with microprocessor trip units. To ensure failsafe emergency tripping of the breakers (ACBs & MCCBs), it shall be supplied with continuous rated shunt trip coils.				
	[iv] Necessary control and switching devices to execute the switching and control logic shall be deemed inclusive of the scope of supply irrespective of them being specified / not specified above or in the SLD.				
	[v] The Panel / Switchboard shall be tested to withstand vibration caused by an earthquake in accordance with IEC 60068-3-3:2013 or IS 1893 Zone V.				
	[vi] The Panel shall be purchased from the original equipment manufacturer (OEM) or OEM authorized franchises only.				
	[vii] All the necessary noble components (viz., structural, Door noble like hinge, Bush, Door alignment gauge and Bus bar noble - Bus bar support, Close profile structure - horizontal & vertical) of the Panel shall be supplied by the OEM.				
	[viii] The Contractor shall furnish dimensional drawings of the items offered indicating all the fittings, dimensional tolerances, typical GADs, etc. to the engineer-in-charge for approval of the MEP Consultant and thereafter A.O. / representative.				
	[ix] The Contractor shall intimate the Engineer-in-Charge of the routine tests in the OEM factory in presence of a representative nominated by the Engineer-in-Charge before dispatch.				
4.01	Supply of Fire MCC	1	Each		
4.02	Installation, testing and commissioning of Fire MCC	1	Job		
5.00	CONTROL CABLE				

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
	M & L for low smoke zero halogen (LS0H) fire survival control cable with circuit integrity, conforming to BS 7846 and rated for 600 V, having plain annealed stranded copper conductor with fire-resistant mica tapes covered by an extruded layer of cross-linked polyethylene, extruded layer of thermoplastic low smoke zero halogen (LS0H) compound, single layer of galvanized steel wires and thermoplastic LS0H compound sheath, suitable for operating temperature range -40 °C to +90 °C and minimum bending radius being 12 times the overall cable diameter, including laying, clamping, termination and ferruling complete as specified and directed by the engineer-in-charge.				
	Make: Havells, Polycab, Finolex, RR Kabel				
5.01	Supply 2 core, 2.5 mm ² (for instrumentation)	40	RM		
5.02	Labour 2 core, 2.5 mm ² (for instrumentation)	40	RM		
5.03	Supply for 3 core, 2.5 mm ² (for auto start/stop panel)	30	RM		
5.04	Labour for 3 core, 2.5 mm ² (for auto start/stop panel)	30	RM		
5.05	Supply of 12 core, 2.5 mm ² (for diesel engine pump)	30	RM		
5.06	Labour for 12 core, 2.5 mm ² (for diesel engine pump)	30	RM		
6.00	FIRE SURVIVAL CABLE				
	M & L for 1.1 kV grade fire survival cable, conforming to IS 17505-1: 2021, and having electrolytic annealed plain / tinned copper (Class 1/2) conductor conforming to IS 8130: 2013, mica tape layer (s) primary insulation, cross linked PE (XLPE) / cross linked HFFR secondary insulation, thermoplastic HFFR inner sheath, glass fibre heat barrier tape, galvanized round wire armour, thermoplastic HFFR (HFS-TP 90) / Cross Linked HFFR (HSF-XL 90) outer sheath including necessary clamping / dressing with cable ties and termination complete as all specified and directed by engineer- in- charge.				

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
6.01	Supply of 3 core 25 mm ² (for electric motor driven main fire pump)	30	RM		
6.02	Labour for 3 core 25 mm ² (for electric motor driven main fire pump)	30	RM		
6.03	Supply of 3 core 6 mm ² (for jockey pump)	20	RM		
6.04	Labour for 3 core 6 mm ² (for jockey pump)	20	RM		
7.00	CABLE TRAY				
	S & F of 100 mm X 50 mm X 1.6 mm (L X D X T) size of perforated painted with powder coating MS cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with MS suspenders including bolts, etc. complete all as specified and directed by the engineer-in-charge.				
	Make: Aravali Engineers, Elcon, Grent, Indiana				
7.01	Supply of 100 mm X 50 mm X 1.6 mm (L X D X T) size of MS cable trays	20	RM		
7.02	Labour for 100 mm X 50 mm X 1.6 mm (L X D X T) size of MS cable trays	20	RM		
8.00	GI PLATE EARTHING PIT				
	M & L for earthing complete with GI earth plate electrode of 60 cm x 60 cm x 6 mm size, buried directly in ground (earth pit not less than 2.25 m deep below ground level) with top edge of the plate not less than 1.5 m below normal ground level, connected to copper strip of size 20 mm x 3 mm as earth lead, by means of bolts, butts, check nuts and washers of galvanised iron or steel, galvanized iron pipe of 40 mm diameter, connected to earthing test point, all as shown in electrical plate No. 5 connected to earthing test point all as specified or indicated including testing on completion and including excavation, earthwork, PCC earth pit of dimensions 550 mm X 550 mm (outer) and 300 mm X 300 mm (inner) and 250 mm deep, with a 10 mm thick CI cover, hinged to CI frame on ground level, GI watering pipe, funnel, etc. as all specified and directed by the engineer-in-charge.				
8.01	Supply of GI Plate Earthing Pit	2	Set		
8.02	Labour for GI Plate Earthing Pit	2	Job		
9.00	EARTH CONTINUITY CONDUCTOR				
	M & L for earth continuity conductor or main earthing lead fixed to wall on batten or recess or chases or buried in ground or drawn in conduit / pipe or fixed to poles or any other indicated situation for loop earthing etc. as required complete as specified and directed by the engineer-in-charge.				

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
9.01	Supply of 32 mm X 6 mm GI flat / strip	75	RM		
9.02	Labour for 32 mm X 6 mm GI flat / strip	75	RM		
10.00	MS ERW PIPE				
	M & L for ISI marked MS ERW pipes conforming to IS: 1239 (Part 1 & 2) with all accessories like all fittings including tees, elbows, reducers, union, flanges, rubber gaskets, GI nuts bolts, washer, including supporting / fixing the pipe on floor / wall / ceiling with clamps, hangers, angles, channels (using anchor fasteners) with painting of one coat primer and 2 or more coats of synthetic enamel paint complete as specified and directed by the engineer-in-charge.				
	Make: Jindal, MSL, SAIL, Tata				
	NOTES:				
	[i] Standard MS fittings with welded joint shall be used on the pipes.				
	[ii] All hangers, clamps, brackets etc. shall be of galvanized iron.				
	[iii] Welding of any kind on the galvanised support / hanger shall not be permitted.				
	[iv] The pipe size 150 mm NB & below shall be MS 'C' class as per IS 1239 (Part- 1): 2004 & IS 1239 (Part- 2): 2011.				
	[v] The pipe size above 150 mm NB shall be welded black steel pipe heavy class as per IS 3589: 2001.				
	[v] Pipes of size more than 50 mm NB shall be butt welded with fittings of equal or higher thickness whereas pipes below 50 mm NB size shall be socket welded.				
10.01	Supply of 200 mm NB MS ERW pipes	20	RM		
10.02	Labour of 200 mm NB MS ERW pipes	20	RM		
10.03	Supply of 150 mm NB MS ERW pipes	80	RM		
10.04	Labour of 150 mm NB MS ERW pipes	80	RM		
10.05	Supply of 100 mm NB MS ERW pipes	70	RM		
10.06	Labour of 100 mm NB MS ERW pipes	70	RM		
10.07	Supply of 80 mm NB MS ERW pipes	15	RM		
10.08	Labour of 80 mm NB MS ERW pipes	15	RM		
10.09	Supply of 65 mm NB MS ERW pipes	20	RM		
10.10	Labour of 65 mm NB MS ERW pipes	20	RM		
10.11	Supply of 50 mm NB MS ERW pipes	10	RM		
10.12	Labour of 50 mm NB MS ERW pipes	10	RM		
10.13	Supply of 25 mm NB MS ERW pipes	20	RM		
10.14	Labour of 25 mm NB MS ERW pipes	20	RM		
11.00	MS ERW PIPE (BURIED)				

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
	M & L for ISI marked ERW pipe conforming to IS: 1239 (Part 1 & 2) with all accessories like all fittings including tees, elbows, reducers, union, flanges, rubber gaskets, GI nuts bolts, washer, including supporting/fixing the pipe in excavated trenches with painting of one coat primer and 2 or more coats of synthetic enamel paint of and wrapping of 4 mm thick protection coating by thermo fusion process complete as specified and directed by the engineer-in-charge.				
	Make: Jindal, MSL, SAIL, Tata				
	NOTES:				
	[i] Standard MS fittings with welded joint shall be used on the pipes.				
	[ii] All hangers, clamps, brackets etc. shall be of galvanized iron.				
	[iii] Welding of any kind on the galvanised support / hanger shall not be permitted.				
	[iv] The pipe size 150 mm NB & below shall be MS 'C' class as per IS 1239 (Part- 1): 2004 & IS 1239 (Part- 2): 2011.				
	[v] The pipe size above 150 mm NB shall be welded black steel pipe heavy class as per IS 3589: 2001.				

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
	[v] Pipes of size more than 50 mm NB shall be butt welded with fittings of equal or higher thickness whereas pipes below 50 mm NB size shall be socket welded.				
11.01	Supply of 150 mm NB MS ERW pipes	50	RM		
11.02	Labour of 150 mm NB MS ERW pipes	50	RM		
12.00	ANTI-VORTEX PLATE				
	M & L for SS Antivortex plate with flange end for suction having SS plate, stude, elbow, nut, washer etc with necessary accessories complete all as specified and directed by the engineer-in-charge.				
12.01	Supply of 200 mm NB SS Antivortex plate	2	Each		
12.02	Labour of 200 mm NB SS Antivortex plate	2	Each		
13.00	Y-STRAINER				
	M & L for PN 1.6 rated CI 'Y' -type strainer with flange end for suction conforming to IS 907: 1984 having CI body, cover, drain plug, SS filter screen, C.N.A.F. gasket, CS bolts and flange drilling standard end connection conforming to IS 1538: 1993 along with necessary accessories complete all as specified and directed by the engineer-in-charge.				
	Make: Kirloskar, Leader, Venus				
13.01	Supply of 200 mm NB 'Y' -type strainer	2	Each		
13.02	Labour of 200 mm NB 'Y' -type strainer	2	Each		
14.00	SLUICE VALVE				
	S & F PN 1.6 rated CI sluice valve, conforming to IS 14846: 2000, having CI body, wedge, bonnet, stuffing box, gland, handwheel, thrust plate, GM body ring, wedge ring, wedge nut, CS bolts & nuts, SS stem, flange drilling standard end connection conforming to IS 1538: 1993, etc. along with necessary accessories complete all as specified and directed by the engineer-in-charge.				
	Make: Leader, Sant, Venus				
14.01	Supply of 200 mm NB sluice valve	2	Each		
14.02	Labour of 200 mm NB sluice valve	2	Each		
14.03	Supply of 150 mm NB sluice valve	2	Each		
14.04	Labour of 150 mm NB sluice valve	2	Each		
14.05	Supply of 100 mm NB sluice valve	4	Each		
14.06	Labour of 100 mm NB sluice valve	4	Each		
14.07	Supply of 65 mm NB sluice valve	1	Each		
14.08	Labour of 65 mm NB sluice valve	1	Each		
14.09	Supply of 50 mm NB sluice valve	2	Each		
14.10	Labour of 50 mm NB sluice valve	2	Each		
15.00	NON-RETURN VALVE				

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
	Supply, installation, testing and commissioning of PN 1.6 rated CI swing check type reflux (non return) valve, conforming to IS 5312 (Part 1): 2004, having CI body & flap, H.T. brass locking pin / hinge pin, EPDM 'O' ring, G.M. locking plug, CS eye bolt, flange drilling standard end connection conforming to IS 1538: 1993 along with necessary accessories complete as specified and directed by the engineer-in-charge.				
	Make: Leader, Sant, Venus				
15.01	Supply of 100 mm NB non-return valve	2	Each		
15.02	Labour of 100 mm NB non-return valve	2	Each		
15.03	Supply of 50 mm NB non-return valve	1	Each		
15.04	Labour of 50 mm NB non-return valve	1	Each		
16.00	BALL VALVE				
	M & L for FM approved and UL listed compact 3 position ball valve with drain orifice (test and drain valve) to test and drain water flow through sprinkler systems having OFF-TEST-DRAIN position, integral sight glass, rated pressure 300 psi, orifice size 15 mm and K factor 5.6, conforming to NFPA 13, along with necessary accessories complete as specified and directed by the engineer-in-charge.				
	Make: Tyco, HD, Viking				
16.01	Supply of 25 mm NB ball valve	16	Each		
16.02	Labour of 25 mm NB ball valve	16	Each		
17.00	PRESSURE SWITCH				
	M & L for pressure switch suitable for pressure range 0-14 bar having die cast aluminium construction and SS sensing element with ball valve, fittings viz. unions, collars, reducers etc. for fire pump sets complete as specified and directed by the engineer-in-charge.				
	Make: Danfoss, Potter, System Sensor				
17.01	Supply of pressure switch suitable for pressure range 0-14 bar	3	Each		
17.02	Labour for pressure switch suitable for pressure range 0-14 bar	3	Each		
18.00	PRESSURE GAUGE				
	Supply, installation, testing and commissioning of bourdon pressure gauge suitable for 0-14 kg pressure range with 4" dial, die cast aluminium body, ball valve, nipple, socket, etc. for delivery lines of fire pump sets near the flow switches all complete as specified and directed by the engineer-in-charge.				
	Make: L & T, Danfoss, Fiebig, H. Gure				
18.01	Supply of bourdon pressure gauge	6	Each		
18.02	Labour for bourdon pressure gauge	6	Each		

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
19.00	MS AIR VESSEL				
	Supplying, installing ,testing and commissioning of MS air vessel for each delivery header, conforming to IS 4736: 1968, fabricated from 6 mm thick MS plate, 300 mm in diameter and 2 m in height with dished ends fabricated from 8 mm thick MS plate having flanged inlet connection and drain arrangement with 25 mm NB valve, pressure gauge & gun metal stop cock complete as specified and directed by the engineer-in-charge.				
19.01	Supply of MS air vessel	1	Each		
19.02	Labour for MS air vessel	1	Each		
20.00	PUDDLE FLANGE				
	M & L for PN 1.6 rated MS puddle flange designed & manufactured as per BS 1560-3.1 & BS 4504 for suction of fire pumps from water tank all complete all as specified and directed by the engineer-in-charge.				
20.01	Supply of 150 mm NB MS Puddle flange	2	Each		
20.02	Installation of 150 mm NB MS Puddle flange	2	Each		
20.03	Supply of 100 mm NB MS Puddle flange	1	Each		
20.04	Installation of 100 mm NB MS Puddle flange	1	Each		
19.00	MS AIR CUSHION TANK				
	Supplying, installing ,testing and commissioning of MS air cushion tank on top of each riser, conforming to IS: 4736-1968, fabricated from 6 mm thick MS plate, 200 mm in diameter and 1.2 m in height with dished ends fabricated from 8 mm thick MS plate having flanged inlet connection and drain arrangement with 25 mm NB valve, pressure gauge & gun metal stop cock complete as specified and directed by the engineer-in-charge.				
19.01	Supply of MS air cushion tank	4	Each		
19.02	Installation, testing & commissioning for MS air cushion tank	4	Each		
20.00	INDOOR HOSE CABINET				
	S & F indoor type lockable wall-mounted hose cabinet made of 18 gauge MS sheet of size 800 mm X 600 mm X 250 mm having double door with 3 mm thick glass and door frame made of 16 gauge MS sheet painted two coats of fire red outside and brilliant white inside over a coat of primer suitable to house two sets of hose RRL hose (15 m length) and gunmetal branch pipe complete as specified and directed by the engineer-in-charge.				

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
20.01	Supply of indoor type lockable wall-mounted hose cabinet made of 18 gauge MS sheet	15	Each		
20.02	Labour for indoor type lockable wall-mounted hose cabinet made of 18 gauge MS sheet	15	Each		
21.00	SINGLE LANDING HYDRANT VALVE				
	S & F gunmetal fire hydrant single landing valve with 80 mm NB flanged inlet, brass spindle controlled 63 mm NB female instantaneous outlet type gunmetal coupling, blank cap, chain, twist release type lug & all accessories conforming to IS 5290: 1993 including fixing and flanged tapping complete as specified and directed by the engineer-in-charge.				
21.01	Supply of gunmetal fire hydrant single landing valve	15	Each		
21.02	Labour for gunmetal fire hydrant single landing valve	15	Each		
22.00	ORIFICE PLATE				
	S & F of orifice plate made out of 6 mm thick SS 304 with orifice of required size to be fitted between flange and landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm ² complete as specified and directed by the engineer-in-charge.				
22.01	Supply of orifice plate	15	Each		
22.02	Labour for orifice plate	15	Each		
23.00	RRL HOSE				
	S & F non-percolating rubber reinforced lined RRL hose type- A 15 m long fire hose of 63 mm NB size, conforming to IS 636: 1988, rated for bursting pressure of 35.7 kg/cm ² complete with gunmetal male & female coupling conforming to IS: 903- 1993, bound and rivetted to the hose pipe with copper rivets and 1.5 mm ² copper wire complete as specified and directed by the engineer-in-charge.				
23.01	Supply of non-percolating rubber reinforced lined RRL hose type- A	30	Each		
23.02	Labour for non-percolating rubber reinforced lined RRL hose type- A	30	Each		
24.00	BRANCH PIPE				
	S & F branch pipe, conforming to IS 903: 1993, having 63 mm NB instantaneous gunmetal inlet, made threaded outlet, 15 mm NB long nozzle, suitable for inter connection to hose pipe coupling complete as specified and directed by the engineer-in-charge.				
24.01	Supply of branch pipe	15	Each		
24.02	Labour for branch pipe	15	Each		

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
25.00	FIRST AID HOSE REEL				
	S & F swinging type 36 m long First Aid Hose Reel, conforming to IS:884-1969, having 19 mm NB thermoplastic reinforced hose reel tubing, conforming to IS: 12585- 1988, 25 mm NB ball valve, stop cock, terminating with gunmetal coupling & nozzle of 6 mm NB outlet with shut-off valve, conforming to IS: 8090-1976 complete with MS socket for tap-off, red colour drum, brackets (including painting) for fixing on wall with anchor fastener, bolts, nuts, etc. complete as specified and directed by the engineer-in-charge.				
25.01	Supply of swinging type 36 m long First Aid Hose Reel	15	Each		
25.02	Labour for swinging type 36 m long First Aid Hose Reel	15	Each		
26.00	FIRE BRIGADE INLET CONNECTION				
	Supply, installation, testing and commissioning of 4- way fire brigade inlet connection, conforming to IS: 5290-1993, with four 63 mm NB inbuilt gunmetal non-return valves, four 63 mm NB instantaneous couplings arranged on 150 mm NB pipe manifold and connected to fire hydrant ring main and fire hydrant wet riser pipe complete as specified and directed by the engineer-in-charge				
26.01	Supply of 4- way fire brigade inlet connection	1	Each		
26.02	Labour for 4- way fire brigade inlet connection	1	Each		
27.00	FIRE BRIGADE DRAW-OFF CONNECTION				
	Supply, installation, testing and commissioning of 2- way fire brigade draw- off connection with two 63 mm NB inbuilt gunmetal non-return valves instantaneous coupling type arranged on 100 mm NB pipe manifold and connected to wet riser main as well as to fire water tank including CI butterfly valve, CI non-return valve and MS cabinet with mounting supports, etc. all complete as specified and directed by the engineer-in-charge.				
27.01	Supply of 2- way fire brigade draw- off connection	1	Each		
27.02	Labour for 2- way fire brigade draw- off connection	1	Each		
28.00	6 KG FIRE EXTINGUISHER				

Sl. No.	Description	Qty.	Unit	Rate	Amount
				(₹)	
	S & F 6 kg capacity dry chemical powder (ABC) type fire extinguisher, conforming to IS 15683: 2006, with initial filling in brand new cylinder with powder coated finish, fitted in gunmetal union, high pressure CO2 gas cartridge, discharge hose, wall mounting bracket / floor trolley mounting accessories along with suitable signage, etc. complete all as specified and directed by the engineer-in-charge.				
28.01	Supply of 6 kg capacity dry chemical powder (ABC)	18	Each		
28.02	Labour for 6 kg capacity dry chemical powder (ABC)	18	Each		
29.00	4.5 KG FIRE EXTINGUISHER				
	S & F of 4.5 kg light-weight squeeze grip CO2 type fire extinguisher, conforming to IS 15683: 2006, with CO2 gas filled in brand new seamless cylinder with powder coated finish, made out of Manganese steel with wheel type valve, discharge nozzle, bend & horn, wall mounting bracket / floor trolley mounting accessories along with suitable signage complete all as specified and directed by the engineer-in-charge.				
29.01	Supply of 4.5 kg light-weight squeeze grip CO2 type fire extinguisher	18	Each		
29.02	Labour for 4.5 kg light-weight squeeze grip CO2 type fire extinguisher	18	Each		
TOTAL					