

Subhead-14
Fire Detection & Protection System

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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14.1 FIRE EXTINGUISHER

14.1.1 DRY CHEMICAL POWDER TYPE

Supply & fixing of the following capacities multi purpose ABC dry chemical powder stored pressure type with manometer system fire extinguisher suitable for repeated use complete with wall bracket, Nitrogen (N2) cartridge, easy refilling system etc. as per sample accepted & approved by the Engineer in Charge.

Mono Ammonium Phosphate (minimum 40%) based ABC dry chemical agent & has a moisture-proof, anti-caking properties. Working pressure : 12 BAR minimum & Test pressure : 25 BAR minimum. Proper fire rating (as per NFPA 10/BS/EN) according to the capacity of the extinguisher. Manufacturer's certificate shall have to be submitted if needed. Also sample of the dry chemical powder will be tested by the proper authority in Bangladesh if needed.

14.1.1.1	1 Kg. capacity.	Each	1,142.00	1,142.00	1,139.00	1,139.00
14.1.1.2	2 Kg. capacity.	Each	1,449.00	1,449.00	1,446.00	1,446.00
14.1.1.3	3 Kg. capacity.	Each	1,878.00	1,878.00	1,876.00	1,876.00
14.1.1.4	5 Kg. capacity.	Each	3,473.00	3,473.00	3,471.00	3,471.00
14.1.1.5	6 Kg. capacity.	Each	4,025.00	4,025.00	4,023.00	4,023.00

14.1.2 CARBON-DI-OXIDE TYPE

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Supply & fixing of the following capacities Carbon-di-Oxide stored pressure type with manometer system fire extinguisher suitable for repeated use complete with wall bracket, CO₂ cartridge, easy refilling system etc. as per sample accepted & approved by the Engineer in Charge.

Working pressure : 12 BAR minimum & Test pressure : 25 BAR minimum. Proper fire rating (as per NFPA 10 / BS / EN) according to the capacity of the extinguisher. Manufacturer's certificate shall have to be submitted if needed. Also sample of the Carbon-di-Oxide will be tested by the proper authority in Bangladesh if needed.

14.1.2.1	3 Kg. capacity.	Each	3,105.00	3,105.00	3,103.00	3,103.00
14.1.2.2	5 Kg. capacity.	Each	4,946.00	4,946.00	4,943.00	4,943.00

14.1.3 FOAM TYPE

Supply & fixing the following capacity foam type with manometer system fire extinguisher suitable for repeated use complete with wall bracket, easy refilling system etc. as per sample accepted & approved by the Engineer in Charge.

Working pressure: 12 BAR minimum & Test pressure : 25 BAR minimum. Proper fire rating (as per NFPA 10 / BS / EN) according to the capacity of the extinguisher. Manufacturer's certificate shall have to be submitted if needed. Also sample of the foam type extinguisher will be tested by the proper authority in Bangladesh if needed.

14.1.3.1	9 Liter capacity.	Each	3,756.00	3,755.00	3,751.00	3,751.00
14.1.4	ACCESSORIES OF FIRE EXTINGUISHERS					
	Providing & fixing of the following parts of fire extinguisher as per sample accepted/approved by the Engineer in Charge.					
14.1.4.1	Trigger.	Each	184.00	184.00	184.00	184.00
14.1.4.2	Hose pipe	Each	344.00	344.00	344.00	344.00
14.1.4.3	Nipple with nozzle	Each	135.00	135.00	135.00	135.00
14.1.4.4	Cartridge up to 6 Kg.	Each	1,104.00	1,104.00	1,104.00	1,104.00
14.1.4.5	ABC powder.	kg	196.00	196.00	196.00	196.00
14.1.4.6	Carbon-di-Oxide recharge	kg	227.00	227.00	227.00	227.00

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14.1.4.7	Foam	liter	215.00	215.00	215.00	215.00
14.1.5	FIRE BALL Supply of 1.25 Kg Fireball with bracket filled with Non-Toxic Mono Ammonium Phosphate of minimum 40 grade (fire class C).	Each	1,841.00	1,841.00	1,841.00	1,841.00
14.1.6	FIRE BLANKET Supply and fixing of fire proof emergency Fire Blanket made of fire glass cloth . Dimension of the blanket should be minimum 6' x 6' . Working temperature is minimum 550 ⁰ C.	Each	1,411.00	1,411.00	1,411.00	1,411.00
14.2	FIRE WATER PUMP (Engine Driven) With Controller Supply , installation , testing & commissioning of UL listed and FM approved diesel engine driven fire pump complete with all related & essential accessories including control panel, listed casing relief valve and vacuum & pressure gauge at the suction and discharge side of pump respectively. The manufacturing company must have manufacturing experience of minimum 30 years . The pump shall be designed and installed in accordance with NFPA 20 standard. Each unit shall be UL listed and FM approved. It should be compatible with BMS supported UL listed and FM approved control panel.					

Type: Pumps shall be of the non-overloading, centrifugal, horizontally split / End Suction type allowing discharge of the liquid without disturbing the pipe connections and operating at not over 3000 rpm. Pumps shall be selected for a total efficiency of not less than 65%. Pump performance curves shall be submitted for approval together with the pump technical data. Pump performance Curves shall be conformed to NFPA 20.

DIESEL ENGINE :

[Handwritten signatures and initials are present below the DIESEL ENGINE section.]

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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The diesel engine shall be **UL listed and FM approved** suitable for rated pump capacity. The engine shall rated at standard conditions for 500 ft above sea level at 29.4°C by the testing laboratory. The engine shall be of a reputed manufacturer from which spare parts can be obtained locally. The engine shall be provided with an adjustable governor capable of regulating engine speed with a range of 10% between shut-off and maximum load conditions of the pump. The governor shall be set to maintain the rated pump speed at maximum pump load. Engines shall be provided with an over speed shutdown device.

BATTERY & CHARGER :

The engine shall be provided with two maintenance free storage battery units, each having sufficient capacity, at 5°C (41°F) to maintain cranking speed recommended by the engine manufacturer through a 6 min cycle. Two means for recharging shall be provided. One shall be the generator furnished with the engine. The other shall be an automatically controlled charger taking power from the building power supply.

FUEL TANK :

The fuel tank shall be as per manufacturer's recommendation with rigid frame. Fuel tank shall have capacity of at least equal to 1 gallon per horsepower plus 5% volume for expansion. Fuel tank shall be equipped with fuel supply line, return line, fill, drain, overflow, air vent and sight glass.

COOLING SYSTEM & ENGINE EXHAUST PIPE :

The engine shall be provided with close circuit cooling water circulation system. The exhaust pipe shall be galvanized steel sized in accordance with the manufacturer's recommendations. The exhaust pipe shall be as short as possible.

CONTROLLER :

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The controller shall be operable automatically on sensing low pressure in the system and shall be provided with a pressure-actuated switch having independent high & low calibrated adjustments. The switch shall be responsive to water pressure in the fire protection system. The pressure-sensing element of the switch shall be capable of momentary surge pressure of 300 psi (min^m) without losing its accuracy, suitable provision shall be made for relieving pressure to the pressure actuated switch to allow testing of the operation of the controller and the pumping unit.

14.2.1	Fire Pump End Suction (500 GPM, 9 BAR)	Each	3,268,857.00	3,268,857.00	3,268,857.00	3,268,857.00
14.2.2	Fire Pump End Suction (500 GPM, 10 BAR)	Each	3,576,969.00	3,576,969.00	3,576,969.00	3,576,969.00
14.2.3	Fire Pump End Suction (500 GPM, 12 BAR)	Each	4,014,289.00	4,014,289.00	4,014,289.00	4,014,289.00
14.2.4	Fire Pump End Suction (500 GPM, 14 BAR)	Each	4,054,046.00	4,054,046.00	4,054,046.00	4,054,046.00
14.2.5	Fire Pump End Suction (750 GPM, 9 BAR)	Each	3,994,411.00	3,994,411.00	3,994,411.00	3,994,411.00
14.2.6	Fire Pump End Suction (750 GPM, 10 BAR)	Each	4,044,106.00	4,044,106.00	4,044,106.00	4,044,106.00
14.2.7	Fire Pump End Suction (750 GPM, 12 BAR)	Each	4,103,741.00	4,103,741.00	4,103,741.00	4,103,741.00
14.2.8	Fire Pump End Suction (750 GPM, 14 BAR)	Each	4,257,797.00	4,257,797.00	4,257,797.00	4,257,797.00
14.2.9	Fire Pump Split Case (1000 GPM, 9 BAR)	Each	4,127,794.00	4,127,794.00	4,127,794.00	4,127,794.00
14.2.10	Fire Pump Split Case (1000 GPM, 10 BAR)	Each	4,640,452.00	4,640,452.00	4,640,452.00	4,640,452.00
14.2.11	Fire Pump Split Case (1000 GPM, 12 BAR)	Each	4,670,269.00	4,670,269.00	4,670,269.00	4,670,269.00
14.2.12	Fire Pump Split Case (1000 GPM, 14 BAR)	Each	4,803,895.00	4,803,895.00	4,803,895.00	4,803,895.00
14.2.13	Fire Pump Split Case (1250 GPM, 9 BAR)	Each	4,640,452.00	4,640,452.00	4,640,452.00	4,640,452.00
14.2.14	Fire Pump Split Case (1250 GPM, 10 BAR)	Each	4,690,147.00	4,690,147.00	4,690,147.00	4,690,147.00
14.2.15	Fire Pump Split Case (1250 GPM, 12 BAR)	Each	5,251,706.00	5,251,706.00	5,251,706.00	5,251,706.00
14.2.16	Fire Pump Split Case (1250 GPM, 14 BAR)	Each	5,515,092.00	5,515,092.00	5,515,092.00	5,515,092.00
14.3.	FIRE WATER PUMP (Motor driven) with controller					

14.3. FIRE WATER PUMP (Motor driven) with controller

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Supply, installation, testing & commissioning of **UL listed and FM approved** electrically driven centrifugal type end suction / split case Fire Water Pump manufactured according to globally accepted international standard, shall be complete with skid mounted, coupled with motor, safety cover etc. The manufacturing company must have manufacturing experience of **minimum 30 years**. Motor shall be 420V / 3 phase / 50 HZ / 2900 rpm / Class F insulation / Enclosure IP55. Motor capacity shall be as per NFPA 20 and performance curve (from manufacturer) shall be provided to verify pump performance.

Pumps shall be of the non-overloading allowing discharge of the liquid without disturbing the pipe connections and operating at not over 3000 rpm. Pumps shall be selected for a total efficiency of not less than 65%.

Electric Motor: The electric motor shall be **UL listed and FM approved** suitable for rated pump capacity. Motor shall be 380V-420V / 3 phase / 50 HZ / 2900 rpm / Class F insulation / Enclosure IP55. Motor capacity shall be as per NFPA 20 and performance curve (from manufacturer) shall be provided to verify pump performance. The motor shall rated at standard conditions for 500 ft above sea level at 29.4°C by the testing laboratory. The motor shall be of a reputed manufacturer from which spare parts can be obtained locally. The motor shall be provided with an constant motor speed with a range of 10% between shut-off and maximum load conditions of the pump. Starting current of motor shall not exceed 2.5 times of rated current.

Controller: The controller shall be **UL listed and FM approved**, BMS supported complete with MCCB / MCB / magnetic contactor / on-off push switch / indication lamp for phase indication, run, trip mode / ampere meter / volt meter / overload selector switch / phase failure protection device / dry operation protection device / volt guard / connector block / bus-bar / CT of rated capacity / ventilation fan / buzzer / cable lugs / and all other accessories. The panel shall be well dressed in side for safety purpose and for looking good.

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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The panel shall be suitable for 3-phase 400 ± 5% volt 50Hz power supply. The panel shall be with auto/manual mode to operate the pumps controlled by pressure sensors. For fire pump the panel shall have option to start the pump automatically and stop shall be manual.

Encloser of the panel shall be made with 16 SWG sheet steel and shall be painted with powder coating of red color approved as Fire code. Door of the panel shall be swing type with locking arrangement. Knob of main MCCB shall be extended in front screen. The panel shall be wall mounted type with fixing arrangement properly.

The panel shall be manufactured in accordance with standard code of practice as NFPA/ NEMA / IEC / VDE / BS standards comprising of required capacity.

14.3.1	Fire Pump End Suction (500 GPM, 9 BAR)	Each	2,043,036.00	2,043,036.00	2,043,036.00	2,043,036.00
14.3.2	Fire Pump End Suction (500 GPM, 10 BAR)	Each	2,374,339.00	2,374,339.00	2,374,339.00	2,374,339.00
14.3.3	Fire Pump End Suction (500 GPM, 12 BAR)	Each	2,595,208.00	2,595,208.00	2,595,208.00	2,595,208.00
14.3.4	Fire Pump End Suction (500 GPM, 14 BAR)	Each	2,810,555.00	2,810,555.00	2,810,555.00	2,810,555.00
14.3.5	Fire Pump End Suction (750 GPM, 9 BAR)	Each	2,153,470.00	2,153,470.00	2,153,470.00	2,153,470.00
14.3.6	Fire Pump End Suction (750 GPM, 10 BAR)	Each	2,484,773.00	2,484,773.00	2,484,773.00	2,484,773.00
14.3.7	Fire Pump End Suction (750 GPM, 12 BAR)	Each	2,694,599.00	2,694,599.00	2,694,599.00	2,694,599.00
14.3.8	Fire Pump End Suction (750 GPM, 14 BAR)	Each	3,036,945.00	3,036,945.00	3,036,945.00	3,036,945.00
14.3.9	Fire Pump Split Case (1000 GPM, 9 BAR)	Each	2,595,208.00	2,595,208.00	2,595,208.00	2,595,208.00
14.3.10	Fire Pump Split Case (1000 GPM, 10 BAR)	Each	2,816,076.00	2,816,076.00	2,816,076.00	2,816,076.00
14.3.11	Fire Pump Split Case (1000 GPM, 12 BAR)	Each	3,025,902.00	3,025,902.00	3,025,902.00	3,025,902.00
14.3.12	Fire Pump Split Case (1000 GPM, 14 BAR)	Each	3,257,814.00	3,257,814.00	3,257,814.00	3,257,814.00
14.3.13	Fire Pump Split Case (1250 GPM, 9 BAR)	Each	2,810,555.00	2,810,555.00	2,810,555.00	2,810,555.00
14.3.14	Fire Pump Split Case (1250 GPM, 10 BAR)	Each	3,036,945.00	3,036,945.00	3,036,945.00	3,036,945.00
14.3.15	Fire Pump Split Case (1250 GPM, 12 BAR)	Each	3,467,639.00	3,467,639.00	3,467,639.00	3,467,639.00
14.3.16	Fire Pump Split Case (1250 GPM, 14 BAR)	Each	3,809,986.00	3,809,986.00	3,809,986.00	3,809,986.00

14.4 **JOCKEY PUMP with controller**
(Pressure maintenance pump)

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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The panel shall be manufactured in accordance with standard code of practice as NFPA/ NEMA / IEC / VDE / BS standards comprising of required capacity.

14.4.1	Jockey Pump (20 GPM, 9 Bar) (for 500 GPM Fire pump)	Each	208,598.00	208,598.00	208,598.00	208,598.00
14.4.2	Jockey Pump (20 GPM, 10 Bar) (for 500 GPM Fire pump)	Each	214,733.00	214,733.00	214,733.00	214,733.00
14.4.3	Jockey Pump (20 GPM, 12 Bar) (for 500 GPM Fire pump)	Each	220,869.00	220,869.00	220,869.00	220,869.00
14.4.4	Jockey Pump (20 GPM, 14 Bar) (for 500 GPM Fire pump)	Each	288,356.00	288,356.00	288,356.00	288,356.00
14.4.5	Jockey Pump (30 GPM, 9 Bar) (for 750 GPM Fire pump)	Each	220,869.00	220,869.00	220,869.00	220,869.00
14.4.6	Jockey Pump (30 GPM, 10 Bar) (for 750 GPM Fire pump)	Each	233,139.00	233,139.00	233,139.00	233,139.00
14.4.7	Jockey Pump (30 GPM, 12 Bar) (for 750 GPM Fire pump)	Each	245,410.00	245,410.00	245,410.00	245,410.00
14.4.8	Jockey Pump (30 GPM, 14 Bar) (for 750 GPM Fire pump)	Each	306,762.00	306,762.00	306,762.00	306,762.00
14.4.9	Jockey Pump (40 GPM, 9 Bar) (for 1000 GPM Fire pump)	Each	257,680.00	257,680.00	257,680.00	257,680.00
14.4.10	Jockey Pump (40 GPM, 10 Bar) (for 1000 GPM Fire pump)	Each	282,221.00	282,221.00	282,221.00	282,221.00
14.4.11	Jockey Pump (40 GPM, 12 Bar) (for 1000 GPM Fire pump)	Each	319,033.00	319,033.00	319,033.00	319,033.00
14.4.12	Jockey Pump (40 GPM, 14 Bar) (for 1000 GPM Fire pump)	Each	355,844.00	355,844.00	355,844.00	355,844.00
14.4.13	Jockey Pump (50 GPM, 9 Bar)(for 1250 GPM Fire pump)	Each	269,951.00	269,951.00	269,951.00	269,951.00
14.4.14	Jockey Pump (50 GPM, 10 Bar)(for 1250 GPM Fire pump)	Each	294,492.00	294,492.00	294,492.00	294,492.00
14.4.15	Jockey Pump (50 GPM, 12 Bar)(for 1250 GPM Fire pump)	Each	325,168.00	325,168.00	325,168.00	325,168.00
14.4.16	Jockey Pump (50 GPM, 14 Bar)(for 1250 GPM Fire pump)	Each	343,574.00	343,574.00	343,574.00	343,574.00

(NB: pressure of jockey pump will be equal to the pressure of fire pump)

14.5 FIRE BRIGADE CONNECTION : 2 - WAY

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Supply and installation of LPCB/ Kitemark certified 2-way fire brigade connection complete in all respect with all accessories. The unit shall have two Inlet connections of 2½" (63mm) male instantaneous with non-return valve and having 4" dia (100mm) flanged type outlet directly connected with stand pipe. It will have also one 25mm dia drain valve for drainage of water, rubber blank cap and chain for protection. Outlet 100mm dia shall be as per BS/EN or equivalent and shall be suitable to withstand pressure of 20kg/cm². It shall be suitable for using with Fire service & civil defence department of Bangladesh.

Each 36,811.00 36,811.00 36,811.00 36,811.00

14.6 FIRE BRIGADE CONNECTION : 4 - WAY

Supply and installation of LPCB/ Kitemark certified 4 - way fire brigade connection complete in all respect with all accessories. The unit shall have four Inlet connections of 2½" (63mm) male instantaneous with non-return valve and having 6" dia (150mm) flanged type outlet directly connected with stand pipe. It will have also one 25mm dia drain valve for drainage of water, rubber blank cap and chain for protection. Outlet 150mm dia shall be as per BS/EN or equivalent and shall be suitable to withstand pressure of 20kg/cm². It shall be suitable for using with Fire service & civil defence department of Bangladesh.

Each 61,352.00 61,352.00 61,352.00 61,352.00

14.7 FIRE HYDRANT UNIT (1½" dia) :

Each 1½" dia fire hydrant unit shall be complete with the following components and accessories.

14.7.1 HOSE ANGLE VALVE (LANDING VALVE) : 1½" dia

Supply and installation of hose angle valve of 1½" (40mm) shall be made with brass. The angle valve shall be UL Listed / FM approved certified and working pressure shall be minimum 300 psi. Inlet shall be threaded end type.

Each 14,479.00 14,479.00 14,479.00 14,479.00

14.7.2 FIRE HOSE : 1½" dia

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Supply & installation of Single Jacket fire hose of 38mm dia 30 meter long with hose rack frame & nipple suitable to install inside the hydrant cabinet. The hose shall conform to NFPA 1961. The hose shall be UL Listed / FM approved. Working pressure & burst test pressure shall be not less than 200 psi & 600 psi respectively, shall be made with special quality EPDM rubber as internal lining, suitable to withstand heat and polluted water, heat and abrasion resistance. Jacketting shall be made up of 100% polyester for extra strength. Hose shall be 30meter long in a single length and shall be with aluminium alloy body instantaneous male coupling in one end other end with instantaneous female coupling. Color of the hose pipe shall be white.

Each 16,565.00 16,565.00 16,565.00 16,565.00

14.7.3 **Jet / spray nozzle : 1½" dia**

Supply & installation of UL listed / FM approved Jet/ spray nozzle having 40mm dia with male instantaneous coupling or shall be connected to the male/ female instantaneous coupling of 38mm hose pipe. The nozzle shall be operable in three modes: jet - spray - shut off. The nozzle shall be light weight and easy operable. Construction of the nozzle shall be of brass & Working pressure shall be not less than 100 psi. Test pressure shall be minimum 230 psi (16 bar). Flow Capacity of nozzle shall not be less than 100 GPM @ 100 psi. Nozzle shall be installed inside the cabinet.

Each 7,730.00 7,730.00 7,730.00 7,730.00

14.8 **FIRE HYDRANT UNIT (2½" dia):**

Each 2½" dia fire hydrant unit shall be complete with the following components and accessories.

14.8.1 **HOSE ANGLE VALVE (landing valve) : 2½" dia**

Supply and installation of Hose angle valve of 2½" (63mm) shall be made with brass & shall conform to NFPA 1961/BS. The angle valve shall be UL Listed / FM approved or LPCB/Kitemark certified and working pressure shall be 300 psi. Inlet shall be threaded end type/ flange type. Inlet shall be installed inside the hydrant cabinet. Coupling shall be suitable for using with Fire service & civil defence department of Bangladesh.

Each 18,406.00 18,406.00 18,406.00 18,406.00

14.8.2 **FIRE HOSE : 2½" dia**

[Handwritten signatures and marks are present below the table, including a large signature on the left and several smaller ones on the right, some with checkmarks.]

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Supply of fire hose of 2½" (63mm) dia 30 meter long with/ without hose rack frame & nipple suitable to install inside the hydrant cabinet. The hose shall conform to NFPA 1961/BS. The hose shall be UL listed / FM approved or LPCB/Kitemark certified. Working pressure & burst test pressure shall be not less than 200 psi & 600 psi respectively, shall be made with special quality EPDM rubber as internal lining, suitable to withstand heat and polluted water, heat and abrasion resistance. Jacketing shall be made up of 100% polyester for extra strength. Hose shall be 30 meter long in a single length and shall be with aluminium alloy body instantaneous male coupling in one end and other end with instantaneous female coupling. Color of the hose pipe shall be

white/red. Coupling shall confirm to BS336 & comply with Fire service & civil defence department of Bangladesh.

14.8.3	JET / SPRAY NOZZLE : 2½" dia Supply & installation of UL listed / FM approved or LPCB/ Kitemark certified Jet/ spray nozzle having 65mm dia with male instantaneous coupling or shall be connected to the female instantaneous coupling of 65mm hose pipe . The nozzle shall be operable in three modes: jet - spray - shut off. The nozzle shall be light weight and easy operable. Construction of the nozzle shall be of brass & Working pressure shall be not less than 100 psi. Test pressure shall be minimum 230 psi(16 bar) Flow Capacity of nozzle shall not be less than 250 GPM @ 100 psi. Nozzle shall be installed inside the cabinet.	Each	23,314.00	23,314.00	23,314.00	23,314.00
14.9	PILLAR HYDRANT PILLAR HYDRANT : DOUBLE HEADED	Each	11,780.00	11,780.00	11,780.00	11,780.00

[Handwritten signatures and initials are present below the table, including names like 'A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J', 'K', 'L', 'M', 'N', 'O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'AA', 'BB', 'CC', 'DD', 'EE', 'FF', 'GG', 'HH', 'II', 'JJ', 'KK', 'LL', 'MM', 'NN', 'OO', 'PP', 'QQ', 'RR', 'SS', 'TT', 'UU', 'VV', 'WW', 'XX', 'YY', 'ZZ', 'AAA', 'BBB', 'CCC', 'DDD', 'EEE', 'FFF', 'GGG', 'HHH', 'III', 'JJJ', 'KKK', 'LLL', 'MMM', 'NNN', 'OOO', 'PPP', 'QQQ', 'RRR', 'SSS', 'TTT', 'UUU', 'VVV', 'WWW', 'XXX', 'YYY', 'ZZZ', 'AAAA', 'BBBB', 'CCCC', 'DDDD', 'EEEE', 'FFFF', 'GGGG', 'HHHH', 'IIII', 'JJJJ', 'KKKK', 'LLLL', 'MMMM', 'NNNN', 'OOOO', 'PPPP', 'QQQQ', 'RRRR', 'SSSS', 'TTTT', 'UUUU', 'VVVV', 'WWWW', 'XXXX', 'YYYY', 'ZZZZ', 'AAAAA', 'BBBBB', 'CCCCC', 'DDDDD', 'EEEEE', 'FFFFF', 'GGGGG', 'HHHHH', 'IIIII', 'JJJJJ', 'KKKKK', 'LLLLL', 'MMMMM', 'NNNNN', 'OOOOO', 'PPPPP', 'QQQQQ', 'RRRRR', 'SSSSS', 'TTTTT', 'UUUUU', 'VVVVV', 'WWWWW', 'XXXXX', 'YYYYY', 'ZZZZZ', 'AAAAA', 'BBBBB', 'CCCCC', 'DDDDD', 'EEEEE', 'FFFFF', 'GGGGG', 'HHHHH', 'IIIII', 'JJJJJ', 'KKKKK', 'LLLLL', 'MMMMM', 'NNNNN', 'OOOOO', 'PPPPP', 'QQQQQ', 'RRRRR', 'SSSSS', 'TTTTT', 'UUUUU', 'VVVVV', 'WWWWW', 'XXXXX', 'YYYYY', 'ZZZZZ']

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Supply and installation of cast Iron body double headed pillar hydrant complete with 2 (two) nos. cast brass made controllable outlet of 65mm dia with female instantaneous outlet, Inlet shall be 100mm dia flanged end. It should be LPCB/ Kitemark certified. The hydrant shall be suitable to withstand test pressure of 300 psi (minimum). Color of the unit shall be red / approved by the manufacturer or as per code. Pillar hydrant Shall be BS standard& comply with Fire service & civil defence department of Bangladesh.

Each 17,179.00 17,179.00 17,179.00 17,179.00

14.10 STEEL CABINET

Fabrication, supply & installation of hydrant cabinet of suitable size (as per site measurement and requirement / recommended by the Engineering to accommodate landing valve, hose, nozzle and coupling. The cabinet shall be with swing type door with or without breakable glass. The cabinet shall be made with 18 SWG sheet steel, powder coated of red color.

Country of origin: Locally fabricated.

14.10.1	Class - I cabinet (for 2.5" hose rack assembly)	Each	14,725.00	14,725.00	14,725.00	14,725.00
14.10.2	Class - II cabinet (for 1.5" hose rack assembly)	Each	14,725.00	14,725.00	14,725.00	14,725.00
14.10.3	Class - III cabinet (for 1.5" hose rack assembly & 2.5 hose angle valve/ landing valve)	Each	15,952.00	15,952.00	15,952.00	15,952.00
14.10.4	Outdoor hydrant box for pillar hydrant	Each	14,725.00	14,725.00	14,725.00	14,725.00

14.11 BLACK STEEL PIPE , 40 SCHEDULE:

Supply and installation of ERW / seamless schedule 40 black steel pipe of API 5L/ASTM A53 standard . The pipe work shall be included with welded type tee, elbow, reducer etc. and also hangers / supports etc completed. Pipe work (over ground) shall be painted with red oxide primer. Underground pipes should be laid after wrapping with approved PVC tape. Pipe wall thickness shall be as per mentioned diameters.

14.11.1	250 mm (10 inch) dia, wall thickness: 8.2mm	ft.	3,804.00	3,804.00	3,804.00	3,804.00
14.11.2	200 mm (8 inch) dia, wall thickness: 8.2mm	ft.	3,313.00	3,313.00	3,313.00	3,313.00
14.11.3	150 mm (6 inch) dia, wall thickness: 7.1mm	ft.	2,945.00	2,945.00	2,945.00	2,945.00

[Handwritten signatures and marks are present below the table, including a large signature on the left and several smaller ones on the right.]

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
14.11.4	100 mm (4 inch) dia, wall thickness: 6.0mm	ft.	2,356.00	2,356.00	2,356.00	2,356.00
14.11.5	80mm (3 inch) dia, wall thickness: 5.5mm	ft.	1,718.00	1,718.00	1,718.00	1,718.00
14.11.6	65 mm (2½ inch) dia, wall thickness: 5.2mm	ft.	1,166.00	1,166.00	1,166.00	1,166.00
14.11.7	50 mm (2 inch) dia, wall thickness: 3.9mm	ft.	724.00	724.00	724.00	724.00
14.11.8	40 mm (1½ inch) dia, wall thickness: 3.7mm	ft.	607.00	607.00	607.00	607.00
14.11.9	32 mm (1.25 inch) dia, wall thickness: 3.6mm	ft.	504.00	504.00	504.00	504.00
14.11.10	25 mm (1 inch) dia, wall thickness: 3.4mm	ft.	521.00	521.00	521.00	521.00
14.11.11	20 mm (¾ inch) dia, wall thickness: 2.9mm	ft.	362.00	362.00	362.00	362.00
14.11.12	12 mm (½ inch) dia, wall thickness: 2.8mm	ft.	233.00	233.00	233.00	233.00

14.12 SS PIPE :

Supply and Installation of Stainless Steel TP304/304L grade Pipe for Fire pumps pressure sensing line. The pipe work shall be included with welded type tee, elbow, reducer etc.

Standard ASTM, ASME, DIN, EN, ISO, JIS..

14.12.1	SS Pipe for Sensing line 20 mm (¾ inch) dia,	ft.	472.00	472.00	472.00	472.00
14.12.2	SS Pipe for Sensing line 12 mm (½ inch) dia,	ft.	368.00	368.00	368.00	368.00

VALVES & FITTINGS**GATE VALVES**

Supply & installation of valves & fittings complies with ANSI, flange / groove type, temperature range: 0°C-80°C; working pressure: 300 PSI minimum, valve body as per ASTM A536, 65-45-12 standard, UL Listed / FM approved.

14.13 OS & Y GATE VALVES

14.13.1	250 mm (10 inch) dia,	Each	92,029.00	92,029.00	92,029.00	92,029.00
14.13.2	200 mm (8 inch) dia	Each	69,942.00	69,942.00	69,942.00	69,942.00
14.13.3	150 mm (6 inch) dia	Each	59,512.00	59,512.00	59,512.00	59,512.00
14.13.4	100 mm (4 inch) dia	Each	44,787.00	44,787.00	44,787.00	44,787.00
14.13.5	80 mm (3 inch) dia	Each	34,235.00	34,235.00	34,235.00	34,235.00
14.13.6	65 mm (2½ inch) dia	Each	24,541.00	24,541.00	24,541.00	24,541.00
14.13.7	50 mm (2 inch) dia	Each	22,087.00	22,087.00	22,087.00	22,087.00

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
14.14	RESILIENT SWING CHECK VALVES :					
14.14.1	250 mm (10 inch) dia,	Each	98,164.00	98,164.00	98,164.00	98,164.00
14.14.2	200 mm (8 inch) dia	Each	70,555.00	70,555.00	70,555.00	70,555.00
14.14.3	150 mm (6 inch) dia	Each	51,536.00	51,536.00	51,536.00	51,536.00
14.14.4	100 mm (4 inch) dia	Each	42,947.00	42,947.00	42,947.00	42,947.00
14.14.5	65 mm (2½ inch) dia	Each	24,541.00	24,541.00	24,541.00	24,541.00
14.14.6	50 mm (2 inch) dia	Each	24,541.00	24,541.00	24,541.00	24,541.00
14.15	Y-STRAINERS					
14.15.1	250 mm (10 inch) dia,	Each	92,029.00	92,029.00	92,029.00	92,029.00
14.15.2	200 mm (8 inch) dia	Each	60,003.00	60,003.00	60,003.00	60,003.00
14.15.3	150 mm (6 inch) dia	Each	49,082.00	49,082.00	49,082.00	49,082.00
14.15.4	65 mm (2½ inch) dia	Each	25,154.00	25,154.00	25,154.00	25,154.00
14.15.5	50 mm (2 inch) dia	Each	24,541.00	24,541.00	24,541.00	24,541.00
14.16	FOOT VALVE WITH STRAINER					
14.16.1	250 mm (10 inch) dia,	Each	85,893.00	85,893.00	85,893.00	85,893.00
14.16.2	200 mm (8 inch) dia	Each	60,003.00	60,003.00	60,003.00	60,003.00
14.16.3	150 mm (6 inch) dia	Each	31,903.00	31,903.00	31,903.00	31,903.00
14.16.4	65 mm (2½ inch) dia	Each	18,406.00	18,406.00	18,406.00	18,406.00
14.16.5	50 mm (2 inch) dia	Each	14,725.00	14,725.00	14,725.00	14,725.00
14.16.6	40 mm (1½ inch) dia	Each	12,270.00	12,270.00	12,270.00	12,270.00
14.17	ANTI VORTEX PLATE					
14.17.1	250 mm (10 inch) dia,	Each	61,352.00	61,352.00	61,352.00	61,352.00
14.17.2	200 mm (8 inch) dia	Each	49,082.00	49,082.00	49,082.00	49,082.00
14.17.3	150 mm (6 inch) dia	Each	36,811.00	36,811.00	36,811.00	36,811.00
14.17.4	65 mm (2½ inch) dia	Each	18,406.00	18,406.00	18,406.00	18,406.00
14.17.5	50 mm (2 inch) dia	Each	12,270.00	12,270.00	12,270.00	12,270.00
14.17.6	40 mm (1½ inch) dia	Each	9,816.00	9,816.00	9,816.00	9,816.00
14.18	FLEXIBLE JOINT :					

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
	Supply & installation of flexible joint complies with ANSI, temperature range: 0°C-80°C ; working pressure: 200 PSI minimum, valve body as per ASTM A536, 65-45-12 standard, UL Listed / FM approved.					
14.18.1	250 mm (10 inch) dia,	Each	45,401.00	45,401.00	45,401.00	45,401.00
14.18.2	200 mm (8 inch) dia	Each	34,357.00	34,357.00	34,357.00	34,357.00
14.18.3	150 mm (6 inch) dia	Each	24,541.00	24,541.00	24,541.00	24,541.00
14.18.4	65 mm (2½ inch) dia	Each	12,270.00	12,270.00	12,270.00	12,270.00
14.18.5	50 mm (2 inch) dia	Each	9,816.00	9,816.00	9,816.00	9,816.00
14.19	BALL VALVES CLASS : PN16,					
	Supply & installation of ball valves complies with ANSI, temperature range: 0°C-80°C ; working pressure: 200 PSI minimum, valve body as per ASTM A536, 65-45-12 standard, UL Listed / FM approved.					
14.19.1	65 mm (2½ inch) dia	Each	11,043.00	11,043.00	11,043.00	11,043.00
14.19.2	50 mm (2 inch) dia	Each	7,976.00	7,976.00	7,976.00	7,976.00
14.19.3	40 mm (1½ inch) dia	Each	3,681.00	3,681.00	3,681.00	3,681.00
14.19.4	25 mm (1 inch) dia	Each	2,700.00	2,700.00	2,700.00	2,700.00
14.19.5	20 mm (¾ inch) dia	Each	1,779.00	1,779.00	1,779.00	1,779.00
14.19.6	12 mm (½ inch) dia	Each	957.00	957.00	957.00	957.00
14.20	PRESSURE GAUGE :					
	Supply and installation of 3.5" - 4" dial type pressure gauges including supply of all accessories and consumable. The range shall be 0-300 psi, UL Listed / FM approved.					
14.21	PRESSURE SWITCH	Each	6,135.00	6,135.00	6,135.00	6,135.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Supply, installation and testing of pressure switch complete with sensing element, enclosure material, 15 mm NPT pressure connection, direct mounting electrical connection, other material etc. accepted / approved by the Engineer. It shall be UL Listed / FM approved.

Each 18,406.00 18,406.00 18,406.00 18,406.00

14.22 PRESSURE RELIEF VALVE

Supply, installation and testing pressure relief valve to automatically relieve excess pressure in fire protection pumping systems. Valve body as per ASTM A536 65-45-12 and available pressure relief range 100-300 PSI. Inlet / outlet shall be flanged / threaded end type, UL Listed / FM approved.

14.22.1	150 mm (6 inch) dia	Each	251,545.00	251,545.00	251,545.00	251,545.00
14.22.2	100 mm (4 inch) dia	Each	214,733.00	214,733.00	214,733.00	214,733.00
14.22.3	80 mm (3.25 inch) dia	Each	122,705.00	122,705.00	122,705.00	122,705.00

14.23 WASTE CONE

Supply & installation of flange type waste cone. Two sight glasses extending from the center of the waste cone allow users to observe the flow of water and ensure that the system's pumps and other components are working correctly. The size of the waste cone shall be selected as per main-relief valve out line: UL Listed / FM approved.

14.23.1	200 x 300 mm (8 x 10 inch) dia	Each	116,570.00	116,570.00	116,570.00	116,570.00
14.23.2	150 x 200 mm (6 x 8 inch) dia	Each	85,893.00	85,893.00	85,893.00	85,893.00
14.23.3	100 x 150 mm (4 x 6 inch) dia	Each	58,898.00	58,898.00	58,898.00	58,898.00

14.24 AUTO AIR-VENT VALVE

Supply & installation of auto air vent valve of 1 inch (25mm) dia. The valve shall be suitable to release air from the fire hydrant pipes. Shall be suitable to withstand pressure up to 10kg/cm². It shall be UL Listed / FM approved.

Each 18,406.00 18,406.00 18,406.00 18,406.00

14.25 FLOW SWITCH

[Handwritten signatures and marks are present below the section header and the table, including a large signature on the left and several smaller ones across the bottom right.]

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
	Supply & installation of flow switch of leaf type suitable for installation of water hydrant pipe. The flow shall sense flow of water within pipe and send signal to water flow monitoring panel. Flow switch shall be under control of water flow supervisory panel to ensure the hydrant operation. Power supply shall be 24VDC. The flow switch shall be UL Listed / FM approved.					
14.25.1	200 mm dia	Each	25,768.00	25,768.00	25,768.00	25,768.00
14.25.2	150 mm dia	Each	25,768.00	25,768.00	25,768.00	25,768.00
14.25.3	100 mm dia	Each	24,541.00	24,541.00	24,541.00	24,541.00
14.25.4	80 mm dia	Each	18,406.00	18,406.00	18,406.00	18,406.00
14.25.5	65 mm dia	Each	18,406.00	18,406.00	18,406.00	18,406.00
14.25.6	50 mm dia	Each	14,725.00	14,725.00	14,725.00	14,725.00
14.26	PRESSURE REDUCING VALVE : 40mm dia					
	Supply & installation of pressure reducing valve of 1½" (40mm) dia, brass body, screwed end type, shall be used with 40mm dia internal hydrant unit (where to reduce high pressure is necessary). Valve body shall be made with hot pressed brass, seat of stainless steel ANSI304 shall be suitable for 80°C. Initial pressure shall be 15 bar, adjustable final pressure shall be 0.5bar (min), 7bar (max), UL Listed / FM approved.					
		Each	17,179.00	17,179.00	17,179.00	17,179.00
14.27	SPRINKLER HEAD					
	Supply & installation of sprinkler head of 1/2" in diameter nominal orifice, K-factor 5.6 chrome finish glass bulb type. Temperature rating 68°C for general area others area shall be specified as per requirement. Sprinkler head shall be UL Listed / FM approved or Installation shall be as per NFPA 13.					
14.27.1	Pendent type (with escutcheon / rochette plate)	Each	2,086.00	2,086.00	2,086.00	2,086.00
14.27.2	Up-right type	Each	1,902.00	1,902.00	1,902.00	1,902.00
14.27.3	Side wall type (with escutcheon / rochette plate)	Each	2,331.00	2,331.00	2,331.00	2,331.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
14.28	SPRINKLAR ALARM CHECK VALVE Supply & installation of sprinkler alarm check valve (wet riser type) The valve shall be actuated by breaking of sprinklar glass bulb. The valve shall be UL Listed / FM approved .					
14.28.1	8" alarm check valve	Each	171,787.00	171,787.00	171,787.00	171,787.00
14.28.2	6" alarm check valve	Each	122,705.00	122,705.00	122,705.00	122,705.00
14.28.3	4" alarm check valve	Each	42,947.00	42,947.00	42,947.00	42,947.00
14.29	PRESSURE REDUCING VALVE FOR SPRINKLER Supply & installation of Pressure Reducing Valve to limit the pressure below the working pressure of Sprinkler , UL Listed / FM approved.					
14.29.1	8" Pressure Reducing Valve	Each	269,951.00	269,951.00	269,951.00	269,951.00
14.29.2	6" Pressure Reducing Valve	Each	202,463.00	202,463.00	202,463.00	202,463.00
14.29.3	4" Pressure Reducing Valve	Each	147,246.00	147,246.00	147,246.00	147,246.00
14.30	ZONE CONTROL VALVE Supply & installation of zone control valve to get the notification of water flow from any fire zone on a combination of butterfly valve with tamper switch, flow switch, pressure gauge and test & drain valves. All accessories shall be UL Listed / FM approved.					
14.30.1	6" zone control valve set	Each	88,347.00	88,347.00	88,347.00	88,347.00
14.30.2	4" zone control valve set	Each	82,212.00	82,212.00	82,212.00	82,212.00
14.30.3	3" zone control valve set	Each	69,942.00	69,942.00	69,942.00	69,942.00
14.30.4	2.5" zone control valve set	Each	61,352.00	61,352.00	61,352.00	61,352.00
14.31	FLOW METER Supply & installation of Grooved / Flanged end type flow meter to measure the amount of liquid passing through the venturi of the flow meter in order to measure the performance of Pump. Range shall be minimum 0 -2500 GPM . It shall be UL Listed / FM approved .					
		Each	196,328.00	196,328.00	196,328.00	196,328.00

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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14.32 TEMPER SWITCH

Supply & installation of Temper Switch to monitor the open position OS&Y type gate valve as per NFPA 20. The temper switch shall be mounted conveniently to OS&Y Gate Valves ranging in size from 2"-8", UL Listed / FM approved.

Temper Switch for 2"- 8" OS&Y Gate Valve

Each

18,406.00

18,406.00

18,406.00

18,406.00

14.33 GAS SUPPRESSION SYSTEM**GAS CYLINDER WITH CLEAN AGENT GAS**

Supply & fixing UL/FM approved seamless cylinder with **FK-5-1-12/HFC-227ea** clean agent gas for gas suppression system, complete with pressure gauge, valve assembly and necessary accessories with a safety burst disc and a safety cap etc in conformity with NFPA 2001. Cylinder shall be seamless steel type manufactured from billets & tested. The cylinder/valve assembly shall have suitable metallic protection for the valve enabling transportation cylinders safely. The cylinder shall be super-pressurized with dry Nitrogen to 25 bar. The cylinder shall be capable of withstanding any temperature between -30° C & 70°C. All cylinders shall be distinctly & permanently marked with the quantity of agent contained, the empty cylinder weight, the pressurization pressure & the zones they are protecting. Storage pressure: 25 bar; Test pressure: From 150bar to 300 bar.

Cylinder should include Syphon tube and Support base/ Strap, complete with Valve Assembly and pressure gauge.

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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The valve assembly shall be mounted directly on the cylinder & should NOT have any adapter provision between the cylinder & valve as per requirements. Each cylinder valve shall have a provision for fixing a supervisory pressure switch & a safety burst disc to protect the cylinder from over pressure. The cylinder valve shall have a disabling plug to prevent accidental discharge of the valve during transportation & installation. Each Valve is to be fitted with a pressure gauge for monitoring loss of pressure. The master cylinder valve is to be released electrically which is performed by means of a solenoid valve arrangement. Pilot cylinder actuation & pneumatic devices shall be used only for Slave Cylinder.

The Clean agent gas is stored in seamless steel cylinders & dry nitrogen is added to provide additional energy to give the required rapid discharge.

Purity (%) of Clean Agent : 99.99, Applicable Fire Class: Class A, B & C fires. Pressure range : 25 bar; Clean agent gas should be UL Listed/ FM Approved.

14.33.1	20 Liter capacity.	Each	380,385.00	380,385.00	380,385.00	380,385.00
14.33.2	30 Liter capacity.	Each	404,926.00	404,926.00	404,926.00	404,926.00
14.33.3	50 Liter capacity.	Each	582,848.00	582,848.00	582,848.00	582,848.00
14.33.4	80 Liter capacity.	Each	785,311.00	785,311.00	785,311.00	785,311.00
14.33.5	100 Liter capacity.	Each	981,639.00	981,639.00	981,639.00	981,639.00
14.33.6	120 Liter capacity.	Each	1,121,522.00	1,121,522.00	1,121,522.00	1,121,522.00
14.33.7	140 Liter capacity.	Each	1,263,860.00	1,263,860.00	1,263,860.00	1,263,860.00

NB: Procuring entity shall mention only one type of clean agent gas (either FK-5-1-12 or HFC-227ea) based on design consideration.

14.34 CLEAN AGENT GAS (REFILLING)

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Supply of **FK-5-1-12/ HFC-227ea** Clean agent gas suitable for storing in seamless steel cylinders & dry nitrogen is added to provide additional energy to give the required rapid discharge.

Purity (%) of Clean Agent : 99.99, Applicable Fire Class: Class A, B & C fires. Pressure range :25 bar; Clean agent gas should be UL Listed/ FM Approved .

NB: Procuring entity shall mention only one type of clean agent gas (either FK-5-1-12 or HFC-227ea) based on design consideration.

KG	6,749.00	6,749.00	6,749.00	6,749.00
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14.35 NOZZLE

Supply & fixing the discharge nozzles are designed to provide the proper flow rate and distribution of clean agent Gas to total floor of hazardous area. It should be UL Listed/ FM Approved.

14.35.1	12.5 mm dia (1/2 Inch) 360°	Each	1,841.00	1,841.00	1,841.00	1,841.00
14.35.2	19 mm dia (3/4 Inch) 360°	Each	2,209.00	2,209.00	2,209.00	2,209.00
14.35.3	25 mm dia (1 Inch), 360°	Each	3,068.00	3,068.00	3,068.00	3,068.00
14.35.4	32 mm dia (1 1/4 Inch) 360°	Each	3,436.00	3,436.00	3,436.00	3,436.00
14.35.5	40 mm dia (1 1/2 Inch) 360°	Each	3,681.00	3,681.00	3,681.00	3,681.00
14.35.6	50 mm dia (2 Inch) 360°	Each	5,522.00	5,522.00	5,522.00	5,522.00
14.35.7	80 mm dia (3 Inch) 360°	Each	7,362.00	7,362.00	7,362.00	7,362.00
14.35.8	25 mm dia (1 Inch), 180°	Each	2,454.00	2,454.00	2,454.00	2,454.00
14.35.9	50 mm dia (2 Inch) 180°	Each	4,295.00	4,295.00	4,295.00	4,295.00

14.36 RELEASE CONTROL PANEL

Providing & fixing Release control panel for gas suppression system complete with battery and all other necessary accessories. Each unit shall be UL Listed/ FM Approved .

14.36.1	2 Zone	Each	92,029.00	92,029.00	92,029.00	92,029.00
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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
14.36.2	4 zone	Each	122,705.00	122,705.00	122,705.00	122,705.00
14.37	ABORT SWITCH Supply and installation of Abort Switch used to momentarily interrupt the release circuit signal when the control unit is in the alarm condition. As long as the abort pushbutton is held in, the fire suppression system will not release. It should be UL Listed/ FM Approved.	Each	10,430.00	10,430.00	10,430.00	10,430.00
14.38	MANUAL RELEASE SWITCH Supply & installation of manual release switch with all necessary accessories. It should be UL Listed/ FM Approved.	Each	10,430.00	10,430.00	10,430.00	10,430.00
14.39	MANIFOLD CHECK VALVE Supply & installation of 2" Manifold Check Valve installed at the discharge manifold. It should be UL Listed/ FM Approved.	Each	19,019.00	19,019.00	19,019.00	19,019.00
14.40	DISCHARGE HOSE Supply & installation of Discharge Hose 2" of minimum 3 meter long. It should be UL Listed/ FM Approved.	Each	17,792.00	17,792.00	17,792.00	17,792.00
14.41	MASTER CYLINDER ADAPTER KIT Supply & installation of Master Cylinder Adapter Kit to actuate the Slave Cylinder. It should be UL Listed/ FM Approved.	Each	3,681.00	3,681.00	3,681.00	3,681.00
14.42	PILOT HOSE/ FLEXIBLE ACTUATION HOSE Supply & installation of Pilot Hose/ Flexible Actuation Hose of minimum 3 meter long (Minimum dia of actuation hose 1/4" or as per manufacturer recommendation). It should be UL Listed/ FM Approved.	Each	4,295.00	4,295.00	4,295.00	4,295.00
14.43	MANIFOLD SUPERVISORY SWITCH/ MONITOR SUPERVISORY SWITCH Supply & installation of Manifold Supervisory Switch/ Monitor Supervisory Switch. It should be UL Listed/ FM Approved.	Each	14,725.00	14,725.00	14,725.00	14,725.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
14.44	PNEUMATIC RELEASE DEVICE / PRESSURE OPERATED CONTROL HEAD (FOR SLAVE CYLINDER) Supply & installation of Pneumatic Release Device / Pressure Operated Control Head which allows for pressure actuation slave cylinders and is mounted directly on top of the slave cylinders valve. It should be UL Listed/ FM Approved.	Each	20,246.00	20,246.00	20,246.00	20,246.00
14.45	ELECTRO MAGNETIC RELEASE DEVICE OR ELECTRIC CONTROL (FOR MASTER CYLINDER) Supply & installation of Electro Magnetic Release Device or Electric Control Head operated electrically from the Detection & Control System or locally with a manual lever on the control head. It should be UL Listed/ FM Approved.	Each	30,676.00	30,676.00	30,676.00	30,676.00
14.46	TWIN FLASHING LIGHT Supply and installation of UL Listed/ FM Approved Twin Flashing Light.	Each	8,589.00	8,589.00	8,589.00	8,589.00
14.47	<u>BALANCING, TESTING & COMMISSIONING OF FIRE HYDRANT SYSTEM.</u>					
14.47.1	For level : 1 to 6	Each	30,676.00	30,124.00	28,038.00	28,038.00
14.47.2	For next floor add	Each	6,135.00	6,025.00	5,608.00	5,608.00
14.48	<u>CONVENTIONAL TYPE FIRE DETECTION & ALARM SYSTEM</u> CONVENTIONAL FIRE ALARM CONTROL PANELS : Supply and installation of conventional fire alarm control panel of following capacity with power supply unit, batteries and other accessories. The panel shall be complete with zone indicating LED, fault indication and optional telephone jack etc. The panel shall have input 220V AC and output 24V DC. Panel shall be confirmed UL listed / FM approved.					
14.48.1	08 zone capacity	Each	86,568.00	86,568.00	86,568.00	86,568.00
14.48.2	16 zone capacity	Each	96,753.00	96,753.00	96,753.00	96,753.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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14.48.3	24 zone capacity	Each	120,251.00	120,251.00	120,251.00	120,251.00
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14.49 INITIATING DEVICES**SMOKE DETECTOR (CONVENTIONAL TYPE)**

Supply and installation of conventional smoke detector complete with base. Shall be UL listed / FM approved. Shall have built-in alarm LED. Power supply shall be 24VDC.

Each	3,259.00	3,259.00	3,259.00	3,259.00
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14.50 HEAT DETECTOR (CONVENTIONAL TYPE)

Supply and installation of conventional heat detector complete with base. Shall be UL listed / FM approved. Shall have built-in alarm LED. Power supply shall be 24VDC.

Each	3,259.00	3,259.00	3,259.00	3,259.00
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14.51 MANUAL CALL POINT

Supply and installation of conventional type manual call point like break glass switch or single action pull station complete with back box and all other accessories and consumables. Power supply shall be 24V DC. It shall be UL listed / FM approved .

Each	3,463.00	3,463.00	3,463.00	3,463.00
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14.52 NOTIFICATION DEVICES**14.52.1 FIRE ALARM BELL**

Supply and installation of conventional type fire alarm bell of 150mm dia , red color, shall be UL listed / FM approved . Power supply shall be 24VDC. Sound level shall be not less than 92 dBA @ 3meter. Color of the bell shall be red.

Each	4,295.00	4,295.00	4,295.00	4,295.00
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14.52.2 HORN

Supply and installation of conventional type horn for notification purpose suitable to produce electronic sound level of 87 to 95 dBA @ 3 meter complete with back box, red color, shall be UL listed / FM approved . Power supply shall be 24VDC. Color of the device shall be red.

Each	4,295.00	4,295.00	4,295.00	4,295.00
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14.52.3 HORN WITH STROBE

[Handwritten signatures and marks are present below the text for item 14.52.3.]

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
	Supply and installation of conventional type horn with strobe for notification purpose complete with back box, suitable to produce electronic sound level of 87 to 95 dBA @ 3 meter and illumination shall be not less than 75 candela red color shall be UL listed / FM approved . Power supply shall be 24VDC.		4,908.00	4,908.00	4,908.00	4,908.00
14.53	Balancing, testing & commissioning of fire detection & alarm system by the competent engineer, technical personnel and provide training to the PWD personnel to operate the sytem perfectly and safely.					
14.53.1	For 8 zone	Each	30,676.00	30,124.00	28,038.00	28,038.00
14.53.2	For 16 zone	Each	61,352.00	60,248.00	56,076.00	56,076.00
14.53.3	For 24 zone	Each	92,029.00	90,372.00	84,114.00	84,114.00

14.54 ADDRESSABLE TYPE FIRE DETECTION & ALARM SYSTEM

ADDRESSABLE TYPE FIRE ALARM CONTROL PANEL

Supply & installation of addressable type fire alarm control panel complete with following basic options. Master controller assembly / CPU shall be suitable with port to add voice alarm system / fire fighter telephone system / Printer / remote annunciator etc. FACP must be comply with internationally accepted standard.

Addressable fire alarm control panel shall be complete, non-coded, addressable, microprocessor based with the ability to communicating with initiating devices, notification appliances, and monitoring and control devices.

Annunciation : Operation of alarm and supervisory initiating devices shall be annunciated at the FACP indicating the location and type of device.

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Environmental compensation : The FACP shall maintain a moving average of the sensor's smoke chamber value to automatically compensate for dust, dirt, and other conditions that could affect detection operations or shall maintain the dust status of the detector.

Programmable sensitivity : Sensitivity of the detector shall be adjusted if needed.

The FACP shall be provided with sufficient battery capacity to operate the entire system upon loss of normal AC power in a normal supervisory mode for a period of 24 hours with 5 minutes of alarm operation at the end of this period. The system shall automatically transfer to battery standby upon power failure. All battery charging and recharging operations shall be automatic.

Battery : Sealed lead-acid. Provide sufficient capacity to operate the complete alarm system in normal or supervisory (non-alarm) mode for a period of 24 hours. Following this period of operation on battery power, the battery shall have sufficient capacity to operate all components of the system, including all alarm indicating devices in alarm or supervisory mode for a period of 5 minutes.

Power supply (input power) shall be 240VAC. All circuits requiring system-operating power shall be 24 VDC and shall be individually fused at the control unit.

The incoming power to the system shall be supervised so that any power failure will be indicated at the control unit. A dedicated LED shall be displayed continuously while incoming power is present. In the absence of main power, LED will change its status.

The system batteries shall be supervised so that a low battery or depleted battery condition or disconnection of the battery shall be indicated at the control unit and displayed for the specific fault type.

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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The system shall support 100% of addressable devices in alarm or operated at the same time, under both primary (AC) and secondary (battery) power conditions.

Loss of primary power shall sound a trouble signal at the FACP. FACP shall indicate when the system is operating on an alternate power supply.

Product data sheets for system components highlighted to indicate the specific products, features, or functions required to meet this specification. Alternate or as-equal products submitted under this contract must provide a detailed line-by-line comparison of how the submitted product meets, exceeds, or does not comply with this specification.

Wiring diagrams, Shop drawings showing system details including location of FACP, all devices, circuiting and details of graphic annunciator.

System power and battery charts with performance graphs and voltage drop calculations to assure that the system will operate as per the prescribed backup time periods and under all voltage conditions as per UL and NFPA standards.

System operation description including method of operation and supervision of each type of circuit and sequence of operations for all manually and automatically initiated system inputs and outputs. A list of all input and output points in the system shall be provided with a label indicating location or use of IDC, NAC, relay, sensor, and auxiliary control circuits.

Alarm silence, system reset and priority to reset global and individual point acknowledge. Set system time and date and clear event log, individual point access for control or parameter revisions.

Cabinet shall be lockable steel enclosure. Arrange unit so all operations required for testing or for normal care and maintenance of the system are performed from the front of the enclosure. If more than a single unit is required to form a complete control unit, provide exactly matching modular unit enclosures.

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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It Should be capable of detecting an abnormal condition and in this case, the appropriate LED (alarm, supervisory or trouble) shall flash. The unit audible signal shall pulse for alarm conditions and sound steady for trouble and supervisory conditions.

The LCD shall display the following information relative to the abnormal condition of a point in the system:

Operator keys shall be the key switch enabled to prevent unauthorized use. The key shall only be removable in the disabled position. Acknowledge, silence and reset operation shall be the same as the FACP.

Voltage: 20 to 32 VDC, system supplied

Operating ambient temperature range shall be : 0° to 45°C(Minimum)

Operating humidity range: 0% to 93% RH Non Condensing (Minimum)

The panel shall be fixed on wall with surface mount box.

Approvals: UL listed / FM approved .

14.56 CENTRAL MONITORING AND CONTROL STATION (AS AND WHEN REQUIRED):

Supply & installation of software based total monitoring and control in a single point of workstation (PC based) over a single network system.

The intuitive interface displays building floor plans and includes clear, concise instructions on what actions must be taken for both fire and non-fire events, customizable screens and multiple configuration option to facilitate set up, minimize operator training and allow you to adapt the system to your needs.

When responding to an event, a coordinated response can save lives and preserve property. The system broadcasts encrypted, real-time voice instructions to a single facility or to multiple locations worldwide using an IP network connection.

The system should provide be the following facilities:

Each

122,705.00

122,705.00

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122,705.00

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Supports digital alarm communicator receiver interface for monitoring
Graphic editing mode allows for on-site or off-site programming of floor plan screens, devices and navigational buttons.

Redundant hard drives for enhanced survivability.

Email notification.

Windows based platform.

Certification: UL listed / FM approved .

Each

674,877.00

674,877.00

674,877.00

674,877.00

14.57 ADDRESSABLE MULTI DETECTOR / MULTI SENSORS

Supply & installation of addressable multi-sensors, shall include with photoelectric / Optical smoke sensing and heat sensing technologies complete with standard base. An alarm shall be determined by either smoke detection, with selectable sensitivity or heat detection, selectable as fixed temperature or fixed with selectable rate-of-rise; or based on an analysis of the combination of smoke and heat activity as per NFPA 72.

The detector shall be self-restoring: detectors do not require resetting or readjustment after actuation to restore normal operation.

No special tools shall be required to remove head once it has been connected with base. Removal of the detector head shall cause a trouble signal at the control unit.

Except false ceiling, detector base shall be fixed with gang box in any other ceiling as per manufacturer instruction.

In alarm condition, the sensor LED shall be on steady or have Bicolor (green/red) status LED

Each sensor shall be scanned by the Control Unit for its type identification to prevent inadvertent substitution of another sensor type. Upon detection of a wrong / unprogrammed device, the control unit shall operate with the installed device at the default alarm settings for that sensor but shall indicate a unprogrammed device trouble condition.

Detector shall have at least Two level of dirty detector warning.

Detector Shall have non volatile memory to store the data of Sensitivity values, troubles, etc.

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Detector shall have listed spacing capacity of minimum 30 feet.

Operating ambient temperature range shall be : 0° to 45°C(Minimum)

Shall be suitable for humidity range: 0% to 93% RH Non Condensing (Minimum)

Housing color shall be frost white.

Approvals : UL listed / FM approved .

14.58 ADDRESSABLE TYPE PHOTOELECTRIC SMOKE DETECTOR Each 7,976.00 7,976.00 7,976.00 7,976.00

Supply & installation of addressable type photoelectric / Optical smoke

The detector shall be self-restoring: detectors do not require resetting or readjustment after actuation to restore normal operation.

No special tools shall be required to remove head once it has been connected with base. Removal of the detector head shall cause a trouble signal at the control unit.

Except false ceiling, detector base shall be fixed with gang box in any other ceiling as per manufacturer instruction.

In alarm condition, the sensor LED shall be on steady or have Bicolor (green/red) status LED

Each sensor shall be scanned by the Control Unit for its type identification to prevent inadvertent substitution of another sensor type. Upon detection of a wrong / unprogrammed device, the control unit shall operate with the installed device at the default alarm settings for that sensor but shall indicate a unprogrammed device trouble condition.

Detector shall have listed Spacing Capacity of 30 Feet.

Detector shall have at least Two level of dirty detector warning.

Detector shall have non volatile memory to store the data of Sensitivity values, troubles, etc.

Detector having a unique identification shall communicate status to the FACP. Detector shall have at least two sensitivity settings.

Removal of the sensor head for cleaning shall not require the setting of addresses.

Operating ambient temperature range shall be minimum: 0° to 45°C(Minimum)

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Shall be suitable for humidity range: 10% to 95% RH

Housing color shall be Frost White or equivalent.

Smoke sensor ambient ratings : Air velocity(Minimum) 0-2000 ft/min

Approvals : UL listed / FM approved

Each

6,135.00

6,135.00

6,135.00

6,135.00

14.59 ADDRESSABLE TYPE HEAT DETECTOR:

Supply & installation of addressable type heat detector with the combination of fixed-temperature and rate-of-rise heat detection.

The detector shall be self-restoring; detectors do not require resetting or readjustment after actuation to restore normal operation.

No special tools shall be required to remove head once it has been connected with base. Removal of the detector head shall cause a trouble signal at the control unit.

Except false ceiling, detector base shall be fixed with gang box in any other ceiling as per manufacturer instruction.

In alarm condition, the sensor LED shall be on steady or have Bicolor (green/red) status LED

Detector shall have listed Spacing Capacity of 50 Feet.

The heat sensors of fixed temperature sensing shall be independent of rate-of-rise sensing and programmable to operate at 130°F or 140°F (Minimum). Sensor rate-of-rise temperature detection shall be selectable at the FACP for 15° F per minute (Minimum).

Detector having a unique identification shall communicate status to the FACP.

Removal of the sensor head for cleaning shall not require the setting of addresses.

Detector shall have non volatile memory to store the data of Sensitivity values, troubles, etc.

Operating ambient temperature range shall be : 0° to 45°C(Minimum)

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Shall be suitable for humidity range: 0% to 93% RH Non Condensing (Minimum)

Housing color shall be frost white.

Approvals: UL listed / FM approved

Each

5,522.00

5,522.00

5,522.00

5,522.00

14.60 ADDRESSABLE MANUAL PULL STATION (MPS)

Supply & installation of addressable type manual call station of red color. Station will mechanically latch upon operation and remain so until manually reset by opening with a key common with the control units.

Shall be with compact construction, suitable to electronics module enclosure minimizes dust infiltration. Allows mounting in standard electrical boxes. Screw terminals for wiring connections.

Activation of the MPS will required a firm downward pull to activate the alarm switch. The pull lever latches into the alarm position and remains extended out of the housing to provide a visible indication.

Operating ambient temperature range shall be : 0° to 45°C(Minimum)

Humidity range: 93% RH(minimum) at 100°F (38°C)

Housing color shall be red with white raised lettering. Housing and pull lever shall be made with lexan polycarbonate or equal.

The MPS shall be semi-flash / surface mount type.

Approvals: UL listed/FM approved.

14.60.1 Addressable manual pull station : Single action

Each

7,362.00

7,362.00

7,362.00

7,362.00

14.60.2 Addressable manual pull station : Double action

Each

9,816.00

9,816.00

9,816.00

9,816.00

14.61 ADDRESSABLE NOTIFICATION DEVICES

14.61.1 ADDRESSABLE NOTIFICATION DEVICE (HORN ONLY) :

Supply & installation of addressable type audible horn for notification purpose shall contain an electronic module and a selectable address setting.

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Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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The device shall be suitable to program the high / low setting of the audible (horn) appliances. The horn shall be red color with / without "FIRE" lettering.

Addressable horn shall be UL listed / FM approved . The horn shall be suitable to produce sound pressure level of 89 dBA @ 24VDC at low level as per NFPA Standard. The horn shall suitable to mount directly to a standard single gang, double gang or 4" square electrical box, without the use of special adapter or trim rings.

Shall have suitable operating ambient temperature range : 0° to 45°C (Minimum)

Humidity range: Minimum 93% RH at 100°F (38°C)

Approvals : UL listed / FM approved.

Each

5,522.00

5,522.00

5,522.00

5,522.00

14.61.2 **ADDRESSABLE NOTIFICATION DEVICE (STROBE ONLY)**

Supply & installation of addressable type notification device for visual notification purpose . It shall contain an electronic module and a selectable address setting.

The strobe shall be red color with / without "FIRE" lettering.

The Strobe shall be selectable at 15, 30, 75, or 110 cd

Shall have suitable operating temperature range : 0° to 45°C (Minimum)

Humidity range: Minimum 93% RH at 100°F (38°C)

Approvals : UL listed / FM approved.

Each

6,135.00

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6,135.00

14.61.3 **ADDRESSABLE NOTIFICATION DEVICE (HORN WITH STROBE)**

Supply & installation of addressable type audible horn with strobe for notification purpose shall contain an electronic module and a selectable address setting.

The device shall be suitable to program the high / low setting of the audible (horn) appliances. The horn shall be red color with / without "FIRE" lettering.

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Addressable horn shall be UL listed / FM approved . The horn shall be suitable to produce sound pressure level of 89 dBA @ 24VDC at low level as per NFPA Standard. The horn shall suitable to mount directly to a standard single gang, double gang or 4" square electrical box, without the use of special adapter or trim rings.

Shall have suitable operating ambient temperature range : 0° to 45°C
(Minimum)

Humidity range: Minimum 93% RH at 100°F (38°C)

Approvals : UL listed / FM approved.

The Strobe shall be selectable at 15, 30, 75, or 110 cd

Each

7,976.00

7,976.00

7,976.00

7,976.00

14.62 ADDRESSABLE MODULES

ISOLATOR MODULE / FAULT ISOLATOR MODULE

Supply & installation of addressable type isolator / fault Isolator module, shall be used in the field wiring between the devices to detect & isolate the devices at the time short circuit in SLC.

The module shall be suitable to provide communications isolation to improve installation convenience and increase the system integrity. Isolation will be automatically activated when an output short circuit is detected (also be suitable for manual operation for isolation and trouble shooting for wiring problems).

The device shall be suitable for indoor use only.

Shall have suitable operating ambient temperature range : 0° to 45°C
(Minimum)

Humidity range: Minimum 93% RH at 100°F (38°C)

Approvals : UL listed / FM approved.

Each

6,135.00

6,135.00

6,135.00

6,135.00

14.63 ADDRESSABLE-CONVENTIONAL INTERFACE MODULE

Supply & installation of addressable - conventional interface module shall be used in the field wiring to connect the conventional Initiating devices with the addressable FACP interfaces to make the system convenient as when as required (configured by the service provider).

The module shall be suitable for single address to the FACP on receiving signal from any conventional initiating device.

The device shall be suitable for indoor use only.

Shall have suitable operating ambient temperature range : 0° to 45°C
(Minimum)

Handwritten signatures and initials: *RS*, *g*, *ck*, *W*, *A*, *df*, *ES*, *Qu*, *n*

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Humidity range: Minimum 93% RH at 100°F (38°C)

Approvals : UL listed / FM approved.

Each

7,362.00

7,362.00

7,362.00

7,362.00

14.64 ADDRESSABLE RELAY / CONTROL MODULE

Supply & installation of addressable relay / control module shall be used to interfaces with control / operate dampers, motors or similar appliances on receiving signal from the FACP as when as required (configured by the service provider).

The device shall be suitable for indoor use only and shall be with back box.

Shall have suitable operating ambient temperature range : 0° to 45°C
(Minimum)

Humidity range: Minimum 93% RH at 100°F (38°C)

Approvals : UL listed / FM approved.

Each

6,381.00

6,381.00

6,381.00

6,381.00

14.65 ADDRESSABLE INPUT/MONITOR MODULE

Supply & installation of addressable input / Monitor module shall be used to monitor the status of the required appliances as per NFPA and send signal to the FACP as when as required (configured by the service provider).

The device shall be suitable for indoor use only and shall be with back box.

Shall have suitable operating ambient temperature range : 0° to 45°C
(Minimum)

Humidity range: Minimum 93% RH at 100°F (38°C)

Approvals : UL listed / FM approved.

Each

6,871.00

6,871.00

6,871.00

6,871.00

14.66 ADDRESSABLE INPUT SIGNAL MODULE

Supply & installation of addressable input signal module for connecting supervised 24VDC audible/visible signal circuits, audio evacuation and telephone circuits to their power inputs as per NFPA and communicating with the FACP as when as required (configured by the service provider).

and communicating with the FACP as when as required (configured by the service provider).

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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The device shall be suitable for indoor use only and shall be with back box.

Shall have suitable operating ambient temperature range : 0° to 45°C (Minimum)

Humidity range: Minimum 93% RH at 100°F (38°C)

Approvals : UL listed / FM approved.

Each

7,362.00

7,362.00

7,362.00

7,362.00

14.67 TELEPHONE JACK

Supply & installation of Telephone Jack for two way communication or Fire Telephone system shall be integrated with FACP using addressable input signal module. The telephone jack shall be semi-flash / surface mount type and use Gang box or Back box. The portable telephone can be configured to provide either Three-state or Four state as per NFPA.

The device shall be suitable for indoor use only and shall be with back box.

Shall have suitable operating ambient temperature range : 0° to 45°C (Minimum)

Humidity range: Minimum 93% RH at 100°F (38°C)

Approvals : UL listed / FM approved.

Each

3,681.00

3,681.00

3,681.00

3,681.00

14.68 PORTABLE TELEPHONE HANDSET

Supply & installation of portable Telephone Hand set. Portable telephone handset is an emergency telephone that provides two-way communication during a fire. Color of the telephone handset shall be Black/Red.

Shall have suitable operating ambient temperature range : 0° to 45°C (Minimum)

Humidity range: Minimum 93% RH at 100°F (38°C)

Approvals : UL listed / FM approved.

Each

7,362.00

7,362.00

7,362.00

7,362.00

14.69 FIREFIGHTER TELEPHONE CONTROL UNIT

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Supply & installation of portable Telephone Hand set. Portable telephone handset is an emergency telephone that provides two-way communication during a fire.

Fire Telephone unit contains the master telephone handset that provides an analog telephone riser for two-way communications between the fire command station and firefighter's telephone stations installed in the facility.

The Fire telephone unit features an alphanumeric display that indicates both incoming and connected calls. Up to five remote telephones may be connected to the riser simultaneously. The fire command center operator can also use the telephone circuit as a page source, permitting paging via the telephone system.

Shall have suitable operating ambient temperature range : 0° to 45°C (Minimum)

Humidity range: Minimum 93% RH at 90°F (32°C)

Approvals : UL listed / FM approved.

Each

147,246.00

147,246.00

147,246.00

147,246.00

14.70 REMOTE BOOSTER POWER SUPPLY

Supply & installation of Remote Booster Power designed to augment fire alarm audible and visual power requirements as well as provide power for auxiliary and security applications as per NFPA 72.

The Remote Booster Power Supply is a self-contained 24 Vdc power supply. The booster contains all of the necessary circuits to monitor and charge batteries, control and supervise Two Class B or One Class A NAC circuits (Minimum) and monitor two controlling inputs from external sources. Minimum Capacity of remote Booster power shall be not less than 6A.

It shall have suitable operating ambient temperature range : 0° to 45°C (Minimum)

Humidity range: Minimum 93% RH Non Condensing

Approvals : UL listed / FM approved.

Each

134,975.00

134,975.00

134,975.00

134,975.00

14.71 DUCT DETECTOR

[Handwritten signatures and initials are present below the section header, including 'Tex', 'a', 'dl', 'CB', 'RHS', 'Suf', 'C', and 'RHS']

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Supply & installation of Duct Detector to install inside the supply or return air duct as per NFPA 72. Sampling tube can be installed with or without the cover in place and can be rotated in 45-degree increments to ensure proper alignment with duct airflow. Shall have facility of remote Test Station for each detector. Shall have environmental compensation with differential sensing for reliable, stable, and drift-free sensitivity

Shall have operating ambient temperature range from -15°C to 60°C with 100 ft/min. to 3500 ft/min air velocity rating which assures reliability under harsh environmental conditions.

Approvals : UL listed / FM approved.

Each 21,473.00 21,473.00 21,473.00 21,473.00

14.72 ADDRESSABLE BEAM DETECTOR(FOR 25 FT AND ABOVE HEIGHT):

Supply & installation of addressable Beam Detector with Reflector which is uniquely suited for protecting open areas with high ceiling, where other methods of smoke detection are difficult to install and maintain. It is to be used with compatible control panes only and maintenance and test requirements of NFPA 72.

The beam detector consists of transmitter / receiver unit and reflector. when smoke enters the area between the unit and the reflector, the smoke causes a reduction in the signal. when the smoke level reaches the predetermined threshold, an alarm is activated.

The beam detector protection range is minimum 16 feet on both sides of the transmitter / receiver unit and minimum 320 feet from transmitter to reflector and shall include a digital display for easy alignment & built in automatic gain control which compensates for signal deterioration from dust build-up.

Operating ambient temperature range: - 30°C to 55°C, Operating humidity range: 10 to 95% RH non condensing.

Approvals: UL listed / FM approved.

Each 122,705.00 122,705.00 122,705.00 122,705.00

14.73 VERY EARLY DETECTION SYSTEM / ASPIRATION DETECTION SYSTEM (ADDRESSABLE TYPE) (AS WHEN REQUIRED):

[Handwritten signatures and initials are present below the section header, including a large signature on the left and several initials and marks across the bottom.]

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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Supply & installation of addressable type Aspiration detection / Very early detection system including controller, pipe and accessories to provide very early warning and best nuisance alarm rejection, higher stability, increased longevity and particle characterization. Direct imaging the sampled particles using a CMOS imager combined with multiple photo-diodes allow vastly more data about the observed particles for a wide range of applications as per the guideline of the NFPA 72.

An intelligent detector connects to the SLC loop of compatible intelligent fire alarm control panels using flash scan protocol to communicate up to five levels of events for display and use in control-by event system programming.

Operating conditions (Ambient: 0°C to 39°C, Sampled air: -20°C to 60°C, Humidity: 5% to 95% RH, non-condensing) IP rating: IP40.

Piping design should be completed using software based design tools (as per manufacturer recommendation).

Pipe Length: Linear: maximum 100 m and Branched maximum 130 m.

Pipe size: 25mm diameter.

Approvals: UL listed / FM approved.

14.73.1	Area Coverage 250 m ²	Each	411,061.00	411,061.00	411,061.00	411,061.00
14.73.2	Area Coverage 500 m ²	Each	558,307.00	558,307.00	558,307.00	558,307.00
14.73.3	Area Coverage 1000 m ²	Each	644,200.00	644,200.00	644,200.00	644,200.00
14.73.4	Area Coverage 2000 m ²	Each	815,987.00	815,987.00	815,987.00	815,987.00

14.74 ADDRESSABLE BACnet / Modbus INTERFACE MODULE:

Supply & installation of addressable BACnet/Modbus Interface Modules for connecting Building Management System with the main Fire Alarm Control Panels as per NFPA 72 standard.

Approvals: UL listed / FM approved.

Each	104,299.00	104,299.00	104,299.00	104,299.00
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[Handwritten signatures and initials are present below the table, including names like M, A, S, and others.]

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
14.75	Programming, testing & commissioning of addressable type fire alarm system by the competent engineer, technical personals and provide training to the pwd personals to operate the system perfectly and safely.					
14.75.1	FACP for up to 150 addressable devices	Each	92,029.00	90,372.00	84,114.00	84,114.00
14.75.2	FACP for 151-250 addressable devices	Each	122,705.00	120,496.00	112,152.00	112,152.00
14.75.3	FACP for 251-500 addressable devices	Each	184,057.00	180,744.00	168,228.00	168,228.00
14.75.4	FACP for 501-750 addressable devices	Each	229,458.00	225,328.00	209,725.00	209,725.00
14.75.5	FACP for 751-1000 addressable devices	Each	256,453.00	251,837.00	234,398.00	234,398.00
14.75.6	FACP for 1001-1500 addressable devices	Each	283,448.00	278,346.00	259,072.00	259,072.00
14.75.7	FACP for 1501-2000 addressable devices	Each	310,443.00	304,855.00	283,745.00	283,745.00
14.76	Supply and installation of "Exit light" complete with rechargeable battery and charge light and other necessary accessories suitable for AC / DC power supply (220V single phase) as per NFPA 101	Each	3,681.00	3,681.00	3,681.00	3,681.00
14.77	Supply and installation of "Evacuation light" complete with rechargeable battery and charge light and other necessary accessories suitable for AC / DC power supply (220V single phase) as per NFPA 101	Each	4,295.00	4,295.00	4,295.00	4,295.00
14.78	SIGNALING CABLE WITH PVC CONDUIT & ACCESSORIES Surface conduit wiring with the following FPLR/ FPLP/ FPL type UL listed / FM Approved / LPCB Approved cable. PVC Insulation for each core shall be FR (Fire Rated) & Drain wire, shield (Aluminum Foil tape/ PET tape) shall meet the minimum requirement as per NEC (National Electric Code) or NFPA 70 or BS. Jacket shall be Fire Rated. All electrical contacts shall be of brass / copper connected through connector or soldering (no twisting shall be allowed) . The work shall be carried out as per direction & approval of the Engineer in charge.					
14.78.1	2C-1.5 sqmm (FPLR/ FPLP/ FPL) cable with 1.5 sqmm (FR) ECC wire through PVC pipe of minimum inner dia 25 mm having wall thickness of 1.5 mm	meter	239.00	239.00	239.00	239.00

meter

239.00

239.00

239.00

239.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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14.78.2	2C-2.5 sqmm (FPLR/ FPLP/ FPL) cable with 2.5 sqmm (FR) ECC wire through PVC pipe of minimum inner dia 25 mm having wall thickness of 1.5 mm	meter	313.00	313.00	313.00	313.00
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14.79 FIRE RATED DOOR

Supply & Installation of UL Listed /FM Approved Fire Rated Door completed with Panic Bar. The door shall be made with 1.5mm thick sheet steel painted with approved red color over a coat of primer. Thickness of the leaf shall be 40mm and filled with fire proof / resisting materials of minimum two hours rated.

The Panic bar shall be Horizontal type, UL Listed/ FM approved made of Aluminium Alloy / steel, chrome plated, c/w with security lock to operated from outside.

Door frame shall be made with same sheet steel of similar thickness. Hinges shall be quite smooth, robust and aligned properly. Peripheral clearance of the shutter should be as per standard code of practice. The opening of the door should be in one direction

Door size shall be minimum 1000mm (width) x 2100mm (height). Measurement of the door shall include Frame

sqm	55,217.00	55,217.00	55,217.00	55,217.00
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14.80 SPARE PARTS

PUMP CONTROL PANEL FOR ENGINE DRIVEN FIRE PUMPS

The controller shall be UL listed and FM approved & BMS supported , completely assembled and wired from the factory. The controller shall be 12 volt / 24 volt., and shall be complete with all necessary component and accessories.

[Handwritten signatures and marks are present below the text, including a circled '2' and various initials.]

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
	The controller shall be operable automatically on sensing low pressure in the system and shall be provided with a pressure-actuated switch having independent high & low calibrated adjustments. The switch shall be responsive to water pressure in the fire protection system. The pressure-sensing element of the switch shall be capable of momentary surge pressure of 300 psi (min ^m) without loosing its accuracy, suitable provision shall be made for relieving pressure to the pressure actuated switch to allow testing of the operation of the controller and the pumping unit.	Each	386,520.00	386,520.00	386,520.00	386,520.00

14.81 PUMP CONTROL PANEL FOR MOTOR DRIVEN FIRE & JOCKEY PUMPS

Supply, installation of **UL listed / FM approved (for Motor driven fire pump) & UL listed / FM approved (for jockey pump)**, BMS supported fire & jockey pump control panel complete with MCCB / MCB / magnetic contactor / on-off push switch / indication lamp for phase indication, run, trip mode / ampere meter / volt meter / overload selector switch / phase failure protection device / dry operation protection device / volt guard / connector block / bus-bar / CT of rated capacity / ventilation fan / buzzer / cable lugs / and all other accessories. The panel shall be well dressed in side for safety purpose and for looking good.

The panel shall be suitable for 3-phase 400 ± 5% volt 50Hz power supply. The panel shall with auto-manual mode to operate the pumps controlled by pressure sensors. For fire pump the panel shall have option to start the pump automatically by stop shall be manual. For jockey pump the panel shall be suitable to start-stop the pump automatically controlled by pressure sensor.

Encloser of the panel shall be made with 16 SWG sheet steel and shall be painted with powder coating of red color approved as Fire code. Door of the panel shall be swing type with locking arrangement. Knob of main MCCB shall be extended in front screen. The panel shall be wall mounted type with fixing arrangement properly.

[Handwritten signatures and initials in blue and black ink are present at the bottom of the page.]

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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The panel shall be manufactured in accordance with standard code of practice as NFPA/ NEMA / IEC / VDE / BS standards comprising of required capacity .

14.81.1	Controller for motor driven Fire Pump 500GPM, 9 BAR	Each	132,521.00	132,521.00	132,521.00	132,521.00
14.81.2	Controller for motor driven Fire Pump 500GPM, 10 BAR	Each	143,565.00	143,565.00	143,565.00	143,565.00
14.81.3	Controller for motor driven Fire Pump 500GPM, 12 BAR	Each	165,652.00	165,652.00	165,652.00	165,652.00
14.81.4	Controller for motor driven Fire Pump 500GPM, 14 BAR	Each	198,782.00	198,782.00	198,782.00	198,782.00
14.81.5	Controller for motor driven Fire Pump 750GPM, 9 BAR	Each	143,565.00	143,565.00	143,565.00	143,565.00
14.81.6	Controller for motor driven Fire Pump 750GPM, 10 BAR	Each	154,608.00	154,608.00	154,608.00	154,608.00
14.81.7	Controller for motor driven Fire Pump 750GPM, 12 BAR	Each	193,260.00	193,260.00	193,260.00	193,260.00
14.81.8	Controller for motor driven Fire Pump 750GPM, 14 BAR	Each	220,869.00	220,869.00	220,869.00	220,869.00
14.81.9	Controller for motor driven Fire Pump 1000GPM, 9 BAR	Each	198,782.00	198,782.00	198,782.00	198,782.00
14.81.10	Controller for motor driven Fire Pump 1000GPM, 10 BAR	Each	209,825.00	209,825.00	209,825.00	209,825.00
14.81.11	Controller for motor driven Fire Pump 1000GPM, 12 BAR	Each	242,956.00	242,956.00	242,956.00	242,956.00
14.81.12	Controller for motor driven Fire Pump 1000GPM, 14 BAR	Each	265,042.00	265,042.00	265,042.00	265,042.00
14.81.13	Controller for motor driven Fire Pump 1250GPM, 9 BAR	Each	220,869.00	220,869.00	220,869.00	220,869.00
14.81.14	Controller for motor driven Fire Pump 1250GPM, 10 BAR	Each	242,956.00	242,956.00	242,956.00	242,956.00
14.81.15	Controller for motor driven Fire Pump 1250GPM, 12 BAR	Each	303,695.00	303,695.00	303,695.00	303,695.00
14.81.16	Controller for motor driven Fire Pump 1250GPM, 14 BAR	Each	331,303.00	331,303.00	331,303.00	331,303.00
14.81.17	Controller for JP (20 GPM, 9 BAR)	Each	98,164.00	98,164.00	98,164.00	98,164.00
14.81.18	Controller for JP (20 GPM, 10 BAR)	Each	110,434.00	110,434.00	110,434.00	110,434.00
14.81.19	Controller for JP (20 GPM, 12 BAR)	Each	122,705.00	122,705.00	122,705.00	122,705.00
14.81.20	Controller for JP (20 GPM, 14 BAR)	Each	147,246.00	147,246.00	147,246.00	147,246.00
14.81.21	Controller for JP (30 GPM, 9 BAR)	Each	122,705.00	122,705.00	122,705.00	122,705.00
14.81.22	Controller for JP (30 GPM, 10 BAR)	Each	134,975.00	134,975.00	134,975.00	134,975.00
14.81.23	Controller for JP (30 GPM, 12 BAR)	Each	171,787.00	171,787.00	171,787.00	171,787.00
14.81.24	Controller for JP (30 GPM, 14 BAR)	Each	196,328.00	196,328.00	196,328.00	196,328.00
14.81.25	Controller for JP (40 GPM, 9 BAR)	Each	122,705.00	122,705.00	122,705.00	122,705.00
14.81.26	Controller for JP (40 GPM, 10 BAR)	Each	134,975.00	134,975.00	134,975.00	134,975.00
14.81.27	Controller for JP (40 GPM, 12 BAR)	Each	159,516.00	159,516.00	159,516.00	159,516.00
14.81.28	Controller for JP (40 GPM, 14 BAR)	Each	171,787.00	171,787.00	171,787.00	171,787.00
14.81.29	Controller for JP (50 GPM, 9 BAR)	Each	147,246.00	147,246.00	147,246.00	147,246.00
14.81.30	Controller for JP (50 GPM, 10 BAR)	Each	159,516.00	159,516.00	159,516.00	159,516.00
14.81.31	Controller for JP (50 GPM, 12 BAR)	Each	184,057.00	184,057.00	184,057.00	184,057.00
14.81.32	Controller for JP (50 GPM, 14 BAR)	Each	214,733.00	214,733.00	214,733.00	214,733.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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14.82 STAIRCASE PRESSURIZATION SYSTEM**AIR LOUVER**

Supply, installation, testing & commissioning of Louver made of Aluminium of following size with all necessary accessories and fittings approved by Engineer in charge

14.82.1	400 x 200 mm	Each	3,141.00	3,141.00	3,141.00	3,141.00
14.82.2	400 x 250 mm	Each	3,927.00	3,927.00	3,927.00	3,927.00
14.82.3	450 x 200 mm	Each	3,534.00	3,534.00	3,534.00	3,534.00
14.82.4	450 x 250 mm	Each	3,976.00	3,976.00	3,976.00	3,976.00
14.82.5	750 x 350 mm	Each	8,422.00	8,422.00	8,422.00	8,422.00
14.82.6	850 x 350 mm	Each	9,345.00	9,345.00	9,345.00	9,345.00
14.82.7	900 x 350 mm	Each	9,880.00	9,880.00	9,880.00	9,880.00
14.82.8	900 x 400 mm	Each	11,176.00	11,176.00	11,176.00	11,176.00
14.82.9	1200 x 350 mm	Each	12,796.00	12,796.00	12,796.00	12,796.00
14.82.10	1200 x 400 mm	Each	13,694.00	13,694.00	13,694.00	13,694.00
14.82.11	1500 x 550 mm	Each	19,436.00	19,436.00	19,436.00	19,436.00
14.82.12	1600 x 600 mm	Each	22,617.00	22,617.00	22,617.00	22,617.00
14.82.13	1650 x 550 mm	Each	21,380.00	21,380.00	21,380.00	21,380.00
14.82.14	1700 x 600 mm	Each	24,031.00	24,031.00	24,031.00	24,031.00
14.82.15	2200 x 800 mm	Each	41,464.00	41,464.00	41,464.00	41,464.00

14.83 PRESSURIZED FAN

Supply, installation, testing & commissioning of Pressurized Fan of following capacity with VFD and pressure sensors control system including non return damper with all necessary accessories and fittings, equipments including all electrical & civil works as per drawing and direction of engineer in charge. Country of Manufacture: Malaysia/South Korea/Thailand.

14.83.1	Capacity : 14000 cfm, ESP 100 Pa	Each	343,574.00	343,574.00	343,574.00	343,574.00
14.83.2	Capacity : 18000 cfm, ESP 100 Pa	Each	441,737.00	441,737.00	441,737.00	441,737.00
14.83.3	Capacity : 28000 cfm, ESP 100 Pa	Each	687,147.00	687,147.00	687,147.00	687,147.00

Item No.	Description of Items	Unit	Unit Rate in Dhaka & Mymensingh Zone (Tk.)	Unit Rate in Chattogram & Sylhet Zone (Tk.)	Unit Rate in Khulna, Barishal & Gopalganj Zone (Tk.)	Unit Rate in Rajshahi & Rangpur Zone (Tk.)
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14.84 DUCT

Supply, installation and testing of galvanized plain sheets duct work of different sizes as per drawing and detail technical specification including supply of duct hanger/ isolator boxes, hanger rods, steel supports and all necessary materials, duct materials and construction shall be completed as per detail specification and SMACNA standards. Sample shall be approved by Engineer-in-Charge. The work shall be completed as per drawing and instruction of Engineer-in-Charge.

14.84.1	Ducts made of 24 SWG GP Sheets	Sft	196.00	196.00	196.00	196.00
14.84.2	Ducts made of 22 SWG GP Sheets	Sft	221.00	221.00	221.00	221.00
14.84.3	Ducts made of 20 SWG GP Sheets	Sft	258.00	258.00	258.00	258.00
14.84.4	Ducts made of 18 SWG GP Sheets	Sft	307.00	307.00	307.00	307.00

[Handwritten signatures and initials in blue ink, including 'fey', 'df', 'CB', 'Surf', and others, are present below the table.]

ANNEXURE - 14

All buildings shall be classified according to their use or by considering the character of their occupancy. The occupancy classification groups shall be as follows:

Class	Category	Sub Category	Description
Occupancy A	Residential	A1	Single Family Dwelling
		A2	Two Family Dwelling
		A3	Flats or Apartments
		A4	Mess, Boarding House, Dormitories and Hostels
		A5	Hotels and Lodging Houses
Occupancy B	Educational	B1	Educational Facilities up to Higher Secondary Level
		B2	Facilities for Training and for Above Secondary Level
		B3	Pre School Facilities
Occupancy C	Institutional for Care	C1	Institution for Care of Children
		C2	Custodial Institution for Physically Capable Adults
		C3	Custodial Institution for Physically Incapable Adults
		C4	Penal and Mental Institution for Children
		C5	Penal and Mental Institution for Adults
Occupancy D	Health Care	D1	Normal Medical Facilities
		D2	Emergency Medical Facilities
Occupancy E	Business	E1	Office
		E2	Research and Testing Laboratories
		E3	Essential Services
Occupancy F	Mercantile	F1	Small Shops and Market (less than 300 sq. m.)
		F2	Small Shops and Market (more than 300 sq. m.)
		F3	Refueling Station
Occupancy G	Industrial	G1	Low Hazard Industry
		G2	Moderate Hazard Industry
Occupancy H	Storage	H1	Low Fire-risk Storage
		H2	Moderate Fire-risk Storage
Occupancy I	Assembly	I1	Large Assembly with Fixed Seats (1000 or more persons)
		I2	Small Assembly with Fixed Seats (less than 1000 persons)

Class	Category	Sub Category	Description
		I3	Large Assembly without Fixed Seats (300 or more person)
		I4	Small Assembly without Fixed Seats (less than 30 persons)
		I5	Sports Facilities
Occupancy J	Hazardous	J1	Explosion Hazard Buildings
		J2	Chemical Hazard Buildings
		J3	Biological Hazard Buildings
		J4	Radiation Hazard Buildings
Occupancy K	Garages	K1	Parking Garage
		K2	Private Garage
		K3	Repair Garage and Showrooms
Occupancy L	Utilities		
Occupancy M	Miscellaneous	M1	Special Structure
		M2	Fences , Tanks and Towers

The details of occupancy classification of buildings are provided in Chapter2 of Part III of BNBC 2020.

TABLE 14.2 : SMOKE AND VENT SIZE AND SPACING

Use group	Hazard condition	Vent area to Floor	Max spacing of
		area ratio	vent centers
Occupancy H1	Low hazard	1:150	45 m
Occupancy H2	Moderate hazard	1:100	36 m
Occupancy J1	High hazard	1:30 to 1:50	22.5 m to 30m
Occupancy J2,J3,J4	High hazard	1:30 to 1:50	22.5 m to 30m
Occupancy K1,K3	Low hazard	1:150	45 m

TABLE 14.3: FIRE PROTECTION FLOW REQUIREMENTS

Building Type	Duration (up to 51 m)	Duration (51 to 102 m)	Duration (Above 102 m)
	(minute, min)	(minute, min)	(minute, min)
Light hazard- I	30	38	45
Light hazard- II	50	62	75
Ordinary hazard- I	75	95	112
Ordinary hazard - II	75	95	112
Ordinary hazard - III	75	95	112

Notes:

Light hazard - I : Occupancy groups, A1, A2, A3, E1

Light hazard - II : Occupancy groups, A4, A5, B, C, D, E2, E3, I2, I4 & F1.

Ordinary hazard - I : Occupancy groups, I1, I3, I5, F2, F3, G1

Ordinary hazard- II : Occupancy groups, G2 & H1

Ordinary hazard- III : Occupancy groups, H2

Extra hazard : Occupancy group, j - pressure and flow requirement for this group shall be

Note : The standpipe shall be located in noncombustible enclosure such that it will be able to provide hose stream to the most remote area of the floor served.

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TABLE 14.4 : PIPING FOR SPRINKLER SYSTEM

Material	Standard
Copper and Copper-Alloy	ASTM B32, ASTM B75, ASTM B88, ASTM B25,ANSI B36
Steel	ASTM A53, ASTM A120, ASTM A135, ASTM A795

TABLE: 14.5 : REQUIRED GPM IN ACCORDANCE WITH NO. OF RISER

No. of Riser	Required GPM
1	500
2	750
3	1000
4 or more	1250

NB: If the building is fully sprinklered , the maximum GPM should be 1000

TABLE 14.6: REQUIRED PRESSURE FOR DIFFERENT PUMPS & HEADS

FLOW RATE	HEIGHT	HEADER & LOOP PIPE DIA	RISER PIPE DIA	REQUIRED PUMP PRESSURE
(GPM)	(METER)	INCH	INCH	(BAR)
500	22-30	6	4	9
	31-33	6	4	10
	34-46	6	6	10
	47--62	6	6	12
	63-66	8	8	12
	67-74	8	8	14
750	22-26	6	4	9
	27-33	6	4	10
	34-42	6	6	10
	43-62	6	6	12
	63-66	8	8	12
	67-74	8	8	14
1000	22-26	6	4	10
	27-33	6	4	12
	34-50	6	6	12
	51-62	8	6	12
	63-74	8	8	14
1250	22-26	8	4	9
	27-33	8	4	10
	34-38	8	6	10
	39-58	8	6	12
	59-62	8	6	14
	63-74	8	8	14

NB : Friction loss is calculated considering maximum horizontal distance between pump & farthest riser 120 feet (for 500 gpm) , 220 feet (for 750 gpm) , 420 feet (for 1000 gpm) ,620 feet (for 1250 gpm) .Residual pressure 4.5 bar is considered.

Table 14.7: MINIMUM DIAMETER FOR RELIEF VALVES

PUMP RATING (GPM)	MINIMUM DIAMETER	
	INCH	
	RELIEF VALVE	RELIEF VALVE DISCHARGE PIPE
500	3	6
750	4	6
1000	4	8
1250	6	8

Table 14.8: SIZE OF WATER SUPPLY STEEL PIPE TO SPRINKLERS

Pipe Size mm (inch) nominal	No. of Sprinkler connection for light Hazard	No. of Sprinkler connection ordinary Hazard	No. of Sprinkler connection ordinary Extra Hazard
25 (1)	2	2	1
32 (1 ¼)	3	3	2
38 (1 ½)	5	5	5
50 (2)	10	10	8
63 (2 ½)	30	20	15
75 (3)	60	40	27
88 (3 ½)	100	65	40
Pipe Size mm (inch) nominal	No. of Sprinkler connection for light Hazard	No. of Sprinkler connection ordinary Hazard	No. of Sprinkler connection ordinary Extra Hazard
100 (4)	NL**	100	55
125 (5)	-	160	90
150 (6)	-	275	150
200 (8)	-	400***	225***

- * Definition of these terms are given in Table 14.3
- ** No limit
- *** One sprinkler system riser of combined system riser shall serve the floor area not more then 4850 m2 for light and ordinary hazardous occupancy and 2325 m2 for extra hazardous occupancy.

Table 14.9: CEILING AREA FOR A SPRINKLER

Construction Type	Light Hazard** Area, m ²		Ordinary Hazard** area ,m ²		Extra Hazard Area,m ²	
	Protected area	Spacing (Max)	Protected area	Spacing (Max)	Protected area	Spacing (Max)
	ft ² (m ²)	ft(m)	ft ² (m ²)	ft(m)	ft ² (m ²)	ft(m)
Roof or Floor on Trusses, Girders or Beam with High Piling ***	200 (18.6)	15(4.6)	130(12.1)	15(4.6)	100(9.3)	15(4.6)
Open Wood joists with High Piling ***	225(20.9)	15(4.6)	130(12.1)	15(4.6)	100(9.3)	15(4.6)
other type of construction with High Piling ***	168(15.6)	15(4.6)	130(12.1)	15(4.6)	100(9.3)	15(4.6)

- Notes :
- * Maximum distance in m between sprinklers and between line of piping.
- ** The definations of these terms are given in Table 14.3
- *** Storage facilities which permit closely piled materials over 4.5 m or materials on rack over 3.6 m.

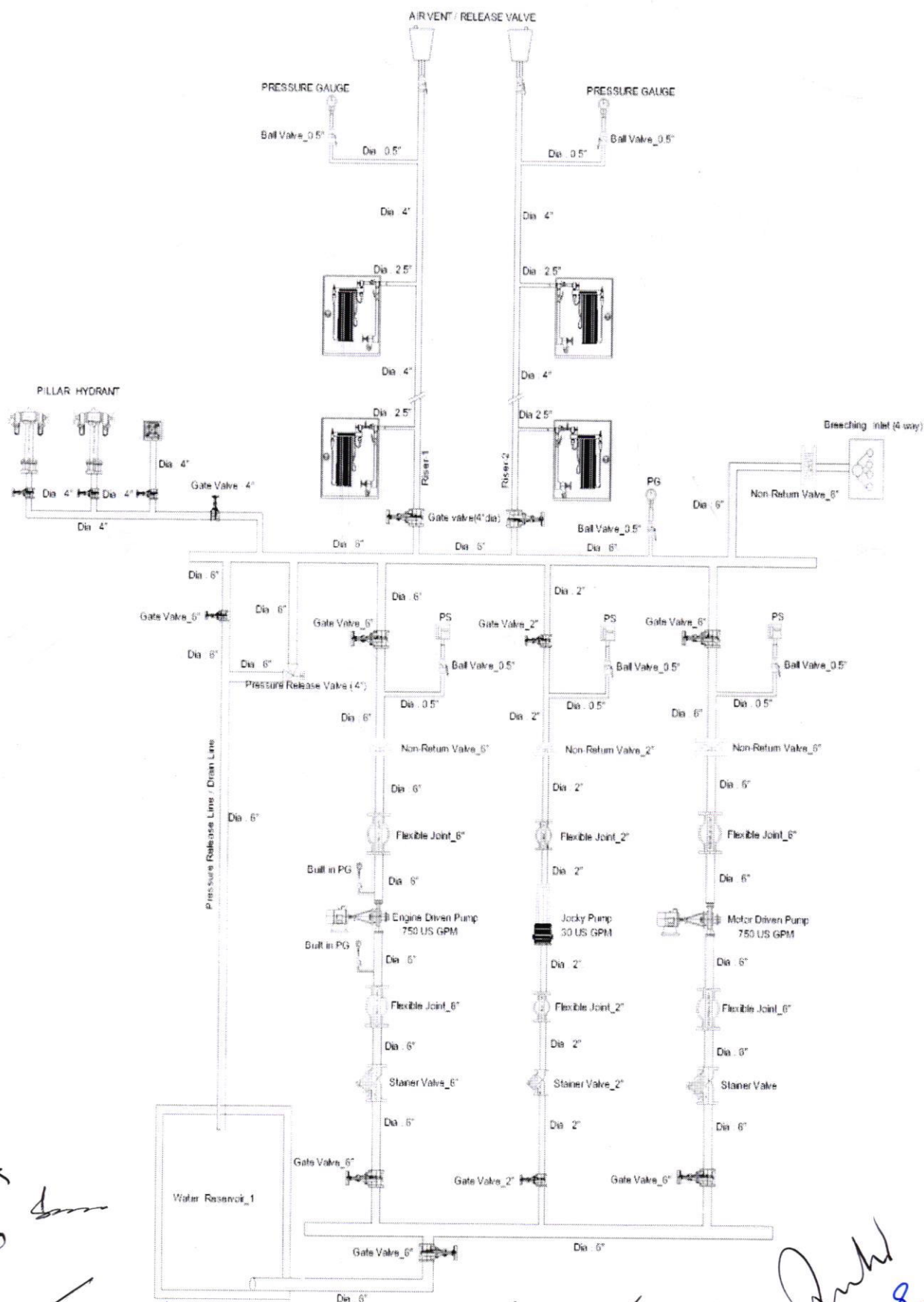
TABLE 14.10: POWER RATING OF MOTOR DRIVEN FIRE PUMP

Flow	Pressure	Power (more or less)
GPM	Bar	KW
500	9	55
500	10	75
500	12	90
500	14	95
750	9	75
750	10	95
750	12	136
750	14	136
1000	9	112
1000	10	112
1000	12	150
1000	14	187
1250	9	112
1250	10	150
1250	12	150
1250	14	187

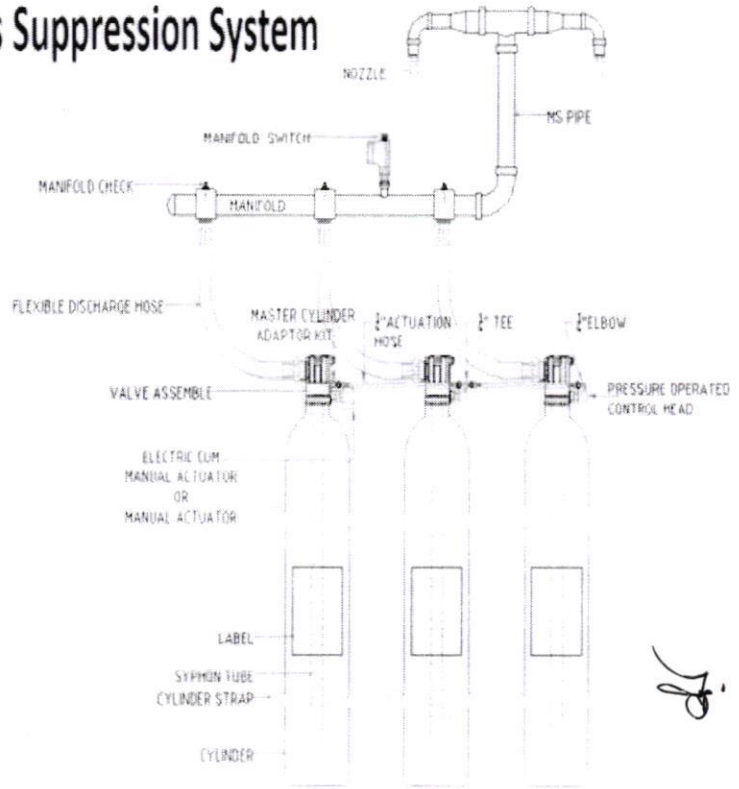
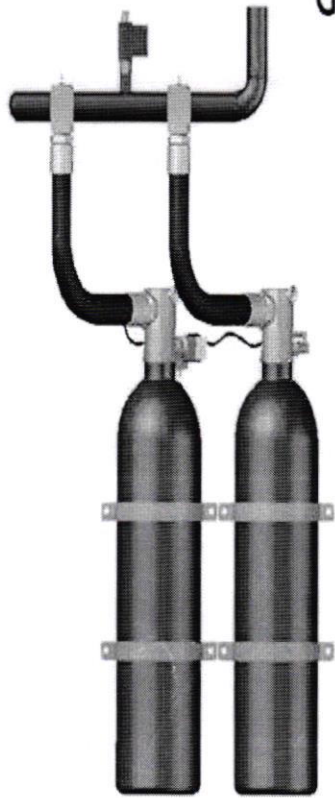
NB: Generator / cable size should be determined considering starting current 2.5 times of rated current of motor.

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TYPICAL FIRE PROTECTION SYSTEM (HYDRANT SYSTEM)



Gas Suppression System



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