

Nagpur Metropolitan Region Development Authority

NAME OF WORK:- REDEVELOPMENT OF DEEKSHABHOOMI PREMISES, NAGPUR

DETAILED QUOTATION NOTICE

Nagpur Metropolitan Region Development Authority is declared as a Nodal Agency for carrying out the work of Redevelopment of Deekshabhoomi Premises at Nagpur.

Nagpur Metropolitan Region Development Authority invites sealed quotations on Item rate basis from authorized Manufacturer/ suppliers / dealers/ contractor for following items. The details of items are available in the office of Executive Engineer (P-3), NMRDA, 2 nd floor , NIT complex, West High Court Road, Opposite Sudama Theatre, Gokulpeth, Nagpur-440010 during office hours. and also on website-www.nmrda.org.The rate should be quoted separately for each item .

S. No.	Item Description	UNIT	Approx Qty	RATE
	CIVIL WORKS			
	WOOD WORK			
1	Providing and fixing 12 mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & spring type fixing arrangement and making necessary holes etc. for fixing required door S.S 304 Grade fittings (Door handle, lock and stopper, Pivot, floor sping (approx 100 to 120 kgs) , lock etc.complete in all aspects as per manufacturer / architect specifications and as directed by engineer in charge.	Sqm	44.10	
2	Providing and fixing 12 mm thick frameless toughened glass partitions of approved brand and manufacturer, including providing and fixing partitions at top & bottom with aluminum channel etc. with necessary S.S 304 grade fittings and fixtures etc. complete in all aspects as per manufacturer / architect specifications and as directed by engineer in charge.	Sqm	226.25	
3	Providing and fixing double leaf panelled door shutter including frame with 460 x 150 mm thick as per detailed architectural drawing (Enclosed) consisting panelled vertical styles 230 mm x 200 mm and top and bottom rail 235 mm x 200 mm and panels 50 mm thick country teak wood including vertical and horizontal styles with carving, engraving, and brass fixtures and fastening and T.W. beading at junctions of panel inserts with 3 coats of wood polish etc.complete in all aspects as per architect specifications / drawing and as directed by engineer in charge.	Sqm	93.50	
4	TENSILE FABRIC WITH STRUCTURE Design, construction and commissioning of light weight stressed tensile fabric structure in Low & Bonar FR 900 membrane including MS Structure with galmet paint etc complete in all aspects as per manufacturer / architect specifications/ drawing enclosed and as directed by engineer in charge.	Sqm	1157.04	

5	<p>Supply and fixing of TRACDEK Double Skin Insulated roofing system comprising external sheet of TRACDEK Klippon profiled sheeting 406 mm cover width, 41 mm crests @ 203 mm c/c manufactured out of 0.58 mm TCT (total coated thickness) SMP coated Galvalume (275 Mpa yield stress) steel. The sheet shall have wide pans with stiffening ribs for effective water shedding and special male/ female ends on side-laps for purlin support and anti-capillary flute in side lap. The sheet shall have a hot-dip metallic coating of zinc aluminium alloy coating mass total of both sides, AZ-150 as per AS-1397) having 275 Mpa yield stress. The sheet shall be coated with exterior coat of Silicon Modified Polyester paint, 20 microns top coat applied over 5 micron primer and conversion coat and a 5 micron polyester back coat.</p>			
	<p>The external sheets shall be fixed to G.I sub-girts with clips and no fasteners to penetrate the sheeting. The clip should lock over the male rib and into the underside of the centre and female ribs and shall be fastened to support with wafer-head self-drilling zinc-coated fasteners. The internal sheeting shall be TRACDEKHi-Rib profiled sheets manufactured out of 0.50 mm TCT SMP GALVALUME Hi-Tensile Steel (150gsm, zinc aluminum alloy coating mass total of both sides,AZ-150 as per AS-1397) having 550 Mpa yield strength. The sheet shall be coated with exterior coat of Silicon Modified Polyester paint, 20 microns top coat applied over 5 micron primer and conversion coat and a 5 micron polyester back coat. The sheets shall have 1020 mm cover width, 28-30 mm high crests at 250 mm wide pans with special male/female side-laps and anti-siphoning feature to prevent leakages. The pan shall be stiffened by using 3 small ribs. The Sub-Girts Of Size 50mm X 50mm X 50mm X 1.6mm Manufactured Out of 18(G) G.I. ‘ Z ’ Shape would be fixed to Inner liner on face Side at Purlin Locations by means of Galvanised Self Drilling self tapping fasteners thru the crest. An Insulation of 50mm thick glass wool insulation16 Kg/M3 - Density wrapped in polythene bags shall be laid over the internal sheeting and G.I. sub girts are held between the external and internal sheets. The sheets shall be supplied in lengths maximum upto 6 - 12 metres to suit site dimensions Flashing, Cappings and Ridges manufactured out of same materials of rate in same thick as mentioned above in standard lengths of 2.5 Mtr and fixed by means of hex-head self drilling stitching screws etc complete as per drawing and as per direction of engineer in charge.</p>	Sqm	194.95	
6	<p>Rebaring of various dia. of TMT bars of required depth and dia. Wise drilling size by Hilti rebar grouting method and refilling by RE-500 Chemical of requied quantity including all necessary equipment and as directed by Engineer-In-Chrgc etc. complete.(Including staging)</p>			
i)	8 mm dia 100 mm deep	Nos	25.00	
ii)	10 mm dia 100 mm deep	Nos	25.00	
iii)	12 mm dia 125 mm deep	Nos	25.00	
iv)	16 mm dia 160 mm deep	Nos	25.00	

7	<p>40 mm thick rubbed white Shivpuri or Gwalior Sand stone flooring over 20 mm (average) thick base of cement mortar 1:5 (1 cement : 5 coarse sand) with joints 3 mm thick, side buttered with cement mortar 1:2 (1 cement : 2 stone dust) admixed with pigment to match the shade of stone and pointing with same mortar, Applying breathable, non-reactive, antifungal, and water repellent Silane/ Siloxane chemical /anti-moss including rubbing, curing and polishing etc complete including transportation, loading, unloading, stacking, scaffolding (For all heights), cleaning , fixing, joint filling, polishing, grinding, necessary lifting machinery, placing,etc. complete. (prior aproval of sample/ brand by exec. engineer is necessary before use) in all aspects as per architect specifications/ drawing and as directed by engineer in charge.</p>	Sqm	3653.31	
8	<p>Gang saw cut 30mm thick Shivpuri or Gwalior White sand stone (machine cut edges) for wall lining etc. (vener work) upto required height, backing filled with a grout of average 12 mm thick cement mortar 1:3 (1 cement : 3 coarse sand) including pointing in white cement mortar 1:2 (1 white cement : 2 stone dust) with an admixture of pigment matching the stone shade with secured to the backing and the sides by means brass cramps of required size & shape in RCC/ CC / Brick masonry backing with cement mortar 1:2 (1 cement : 2 coarse sand), including drilling necessary hole for pins and fastners, Applying breathable, non-reactive, antifungal, and water repellent Silane/ Siloxane chemical /anti-moss etc including rubbing, curing and polishing etc etc complete in all aspects including transportation, loading, unloading, stacking, scaffolding (For all heights), cleaning , fixing, joint filling, polishing, grinding, necessary lifting machinery, placing,etc. complete. (prior aproval of sample/ brand by exec. engineeruld be fixed to Inner liner on face Side at Purlin Locations by means of Galvanised Self Drilling self tapping fasteners t</p>	Sqm	230.13	
9	<p>38 mm thick wood block flooring of first class teak wood laid over 25 mm thick leveling layer of cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 10 mm nominal size) coated with a thin layer of hot bitumen penetration 80/25 (blown type) @ 2.45 kg per sqm, including fixing blocks in position after dipping in hot bitumen (blown type) up to half depth, planed, levelled smooth and finished etc including transportation, loading, unloading, stacking, scaffolding (For all heights), cleaning , fixing, joint filling, polishing, grinding, necessary lifting machinery, placing,etc. complete. (prior aproval of sample/ brand by exec. engineer is necessary before use) as directed by engineer in charge .complete in all aspects as per architect specifications/ drawing and as directed by engineer in charge.</p>	Sqm	194.95	

10	<p>Providing and laying machine cut 18 mm thick Italian Marble stone flooring , Perlato, Rosso verona, Fire Red or Dark Emperadore etc,mirror polished,laid in required pattern in linear portion of the building all complete as per architectural drawings, with 18 mm thick stone slab laid over 20mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with white cement slurry @ 4.4 kg/sqm, including pointing with white cement slurry admixed with pigment to match the marble shade including rubbing, curing and polishing etc including transportation, loading, unloading, stacking, scaffolding (For all heights), cleaning , fixing, joint filling, polishing, grinding, necessary lifting machinery, placing,etc. complete. (prior aproval of sample/ brand by exec. engineer is necessary before use)complete in all aspects as per architect specifications/ drawing and as directed by engineer in charge.</p>	Sqm	951.75	
11	<p>Providing and fixing machine cut 18 mm thick Italian Marble stone,Perlato, Rosso verona, Fire Red or Dark Emperadore etc., mirror/ eggshell polished , Marble stone work for wall lining (vener work) including dado, skirting, risers of steps etc., in required design and pattern wherever required, stones of different finished surface texture, on 12 mm (average) thick cement mortar 1:3 (1 cement : 3 coarse sand) laid and jointed with white cement slurry @ 3.3 kg/sqm including pointing with white cement slurry admixed with pigment of matching shade, including rubbing, curing, polishing etcincluding rubbing, curing and polishing etc including transportation, loading, unloading, stacking, scaffolding (For all heights), cleaning , fixing, joint filling, polishing, grinding, necessary lifting machinery, placing,etc. complete. (prior aproval of sample/ brand by exec. engineer is necessary before use) complete in all aspects as per architect specifications/ drawing and as directed by engineer in charge.</p>	Sqm	218.41	
12	<p>Providing and fixing Stone work ashlar sunk Shivpuri or Gwalior White sand stone or moulded or sunk and moulded upto required level in cement mortar 1:6 (1 cement : 6 coarse sand) including pointing with white cement mortar 1:2 (1 white cement : 2 stone dust) with and admixture of pigment matching the stone shade, Triangular/ Square/ rectangular/ circular/ polygonal/moulding/ carving pillars, Applying breathable, non-reactive, antifungal, and water repellent Silane/ Siloxane chemical / anti-moss etc including rubbing, curing and polishing etc including transportation, loading, unloading, using mechanical equipments/machine, stacking, scaffolding (For all heights), cleaning , fixing, joint filling, polishing, grinding, necessary lifting machinery, placing,etc. complete. (prior aproval of sample/ brand by exec. engineer is necessary before use) complete in all aspects as per architect specifications/ drawing and as directed by engineer in charge.</p>	Cum	738.27	

13	<p>Providing and fixing Shivpuri or Gwalior White sand stone work in Capitol /copings/ cornices/ string courses and plinth courses, upto required thickness in Cement mortar 1:6 (1 cement : 6 coarse sand), including pointing with white cement mortar 1:2 (1 white cement : 2 stone dust) with an admixture of pigment matching the stone shade, Applying breathable, non-reactive, antifungal, and water repellent Silane/ Siloxane chemical /anti-moss etc including rubbing, curing and polishing etc including transportation, loading, unloading using mechanical equipments/machine , stacking, scaffolding (For all heights), cleaning , fixing, joint filling, polishing, grinding, necessary lifting machinery, placing, etc. complete. (prior approval of sample/ brand by exec. engineer is necessary before use) complete in all aspects as per architect specifications / drawing and as directed by engineer in charge.</p>	Cum	809.40	
14	<p>Providing and fixing Shivpuri or Gwalior White sand stone 30-40 thick gang saw cut stone dry cladding including all heights with (machine cut edges) of uniform colour and size upto or above 1m x 1m, fixed with the help of fixing adjustable brass cramps, pins etc. of approved quality required shape and size adjustable with nuts, bolts, and washer(total weight not less than 260 gms) including making necessary recesses in stone slab, drilling required holes etc. and sealing the joints with approved weather sealant on walls at all heights, Applying breathable, non-reactive, antifungal, and water repellent Silane/ Siloxane chemical /anti-moss etc including rubbing, curing and polishing etc including transportation, loading, unloading, stacking, scaffolding (For all heights), cleaning , fixing, joint filling, polishing, grinding, necessary lifting machinery, placing,etc. complete. (prior approval of sample/ brand by exec. engineer is necessary before use) complete in all aspects as per architect specifications/ drawing / design and as directed by engineer in charge</p>	Sqm	10575.98	
15	<p>Providing and fixing stone Shivpuri or Gwalior White sand stone jali 40 mm thick throughout in cement mortar 1:3 (1 cement : 3 coarse sand), including pointing in white cement mortar 1:2 (1 white cement : 2 stone dust) with an admixture of pigment, matching the stone shade, jali slab with or without any chamfers, Applying breathable, non-reactive, antifungal, and water repellent Silane/ Siloxane chemical /anti-moss etc including rubbing, curing and polishing etc including transportation, loading, unloading, stacking, scaffolding (For all heights), cleaning , fixing, joint filling, polishing, grinding, necessary lifting machinery, placing,etc. complete. (prior approval of sample/ brand by exec. engineer is necessary before use) complete in all aspects as per architect specifications/ drawing / design and as directed by engineer in charge etc complete in all aspects as per architect specifications/ drawing / design and as directed by engineer in charge.</p>	Sqm	561.94	

16	<p>Waterproofing Treatment for Landscaping Decks</p> <p>Polyurethane based waterproofing system for podium and landscape decks.</p> <p>Compressed air cleaning has to be done so as to make the surface free of dust, debris, laitance etc. Repairing cracks by cutting and making Vgroove in 25x25 mm, with SBR polymer modified mortar Dr. Fixit Pidicrete URP or equivalent. filling the groove with CM(1:3) mixed with polymer 10% by weight of cement</p> <p>Providing and making fillets at the junction of the walls and the slabs using cement mortar of 1:4 mix admixed with 5 % of DR. FIXIT URP or equivalent by weight of cement.</p> <p>Provide and applying Dr. Fixit Flexi PU 270(I) or equivalent , A single component PU based cold applied waterproofing coating based on pure elastomeric hydrophobic polyurethane resins having resistance to root penetration, Apply 2 coats@1.8kg/sq.mtr to achieve an average thickness of 1.2 to 1.3 mm.The product must have the following technical properties :Elongation at break > 400 % as per ASTM D-412, Tensile strength 4 N/mm2 as per ASTM D412, Shore hardness-65 as per ASTM 2240. Thecoating must be applied over the prepared substrate primed with PU Primer@180-190gms/sq.mtr.</p> <p>Providing & laying of minimum 250 gsm geotextile layer.</p> <p>Laying of Protection screed of average 75 mm thick in slope using M20 grade concrete over geotextile as per recommendations including screed concrete etc complete in all aspects as per architect specifications/ drawing / design and as directed by engineer in charge</p>	Sqm	13141.45	
17	<p>Providing and applying fibre reinforced elastomeric liquid water proofing membrane with resilient acrylic polymers having Sun Reflectivity Index (SRI) of 105 on top of concrete roof in three coats @10.76 litre/ 10 sqm. One coat of self-priming of elastomeric waterproofing liquid (dilution with water in the ratio of 3:1) and two coats of undiluted elastomeric waterproofing liquid (dry film thickness of complete application/system not less than 500 microns). The operation shall be carried out after scrapping and properly cleaning the surface to remove loose particles with wire brushes, complete in all respect as per the direction of Engineer-in-Charge.</p>	Sqm	452.86	
18	<p>Replantation of Trees of various girth sizes including digging out the tree from roots, cutting and disposing extra branches, transporting the tree to the place of plantation, necessary excavation, watering , refilling, labour, machinery etc as directed by engineer in charge and maintaning the transplanted tree till well established by watering , weeding , stirring the soil and clipping if necessary and maintaning for 2 years etc complete.</p>	JOB	50.00	

19	<p>Providing and fixing mild steel framework with design of cast iron (Weight of M.S =65 Kg / Sqm + Weight of CI =30 Kg/ Sqm as per detailed drawing and design provided by the project consultant / Architect including all fixtures necessary ,welding ,transportation, loading unloading installation with hydra and similar equipments fixing done with hilti make HRD C Anchor bolts comprising of polyamide PA6 Grade sleeve and coated anti corosive primer and two coats of oil painting etc complete as approved by engineer consultant/ Engineer- incharge MS gate with CI (65+30) KG / SQM P/F Mild steel grill work with coat iron casting (50 kg/Sqm) etc complete in all aspects as per architect specifications/ drawing / design and as directed by engineer in charge</p>	Sqm	100.00	
20	<p>Providing and fixing white vitreous china wall hung water closet with seat cover, CP brass flush valve suitable for dual flush (3 & 6 LPF) including support chair bracket , nuts, bolts and gasket etc complete in all respects including cutting and making good the walls where required, comparising of Following:-.</p> <p>One No. Wall Hung WC with seat cover Jaquar Model- FLS-WHT-5953 or Equivalent model of Kohlar/Roca.</p> <p>One No. Concealed Cistern Jaquar Model- JCS-WHT-2400WS or Equivalent model of Kohlar/Roca.</p> <p>One No. Flush Plate Jaquar Model- JCP-CHR-372415 or Equivalent model of Kohlar/Roca.</p> <p>One No. C.P brass toilet paper holder Jaquar cat. No. ACN-1153N or Equivalent model of Kohlar/Roca,Including cutting and making good the walls wherever required.</p> <p>One No. C.P. cast brass twin coat hooks fixed to PVC rawl plug with SS screws Jaquar Cat. No. ACN-1161N or Equivalent model of Kohlar/Roca.</p> <p>One No. health faucet with 1 m long flexible tube and wall hook including all fittings Jaquar Cat No.ALD-573 or Equivalent model of Kohlar/Roca.</p> <p>One No. Aerosol Perfume Dispenser Euronics Model-EA 24 or Equivalent model of Kohlar/Jaquar ,including all fittings complete in all respect.</p> <p>One No. C.P. brass 15mm nominal bore angle valve Jaquar cat. FLR-5053N or Equivalent model of Kohlar/Roca.</p> <p>One No. 15mm C.P. copper connecting pipe 450mm long with C.P. brass nuts, washers complete in all respects.(Jaquar Cat No. ALD 803AB or Equivalent model of Kohlar/Roca)</p> <p>One No. C.P. brass 15 mm nominal bore 2-Way bib cock Jaquar cat. FLR-5041N or Equivalent model of Kohlar/Roca.</p> <p>Wall hung water closet item as Described Above</p>	33	Each	
21	<p>Providing and fixing white vitreous china wash basin with special fabricated brackets painted white, faucets as required, 32 mm C.P. brass waste.32 mm C.P. brass bottle trap & pipe to wall with rubber adopter for waste connection and C.P. brass wall flange complete in all respects including cutting and making good the walls where required comparising of Following:-.</p> <p>One No. Under Counter Wash basin Jaquar Model No.: FLS-WHT-5701 or Equivalent model of Kohlar/Roca.</p>			

	<p>One No. 32 mm CP brass waste Jaquar Cat. No. ALD-709 or Equivalent model of Kohlar/Roca.</p> <p>One No. 32 mm C.P. brass bottle trap with pipe to wall and C.P. wall flange Jaquar Cat. No. ALD 769 L 250 X 190 or Equivalent model of Kohlar/Roca.</p> <p>One No. 15mm C.P brass Pillar Foucet Jaquar cat. No. PRS-031 or Equivalent model of Kohlar/Roca</p> <p>One No. C.P. brass 15mm nominal bore angle valve Jaquar cat. FLR-5053N or Equivalent model of Kohlar/Roca.</p> <p>One No. 15mm C.P. copper connecting pipe 450mm long with C.P. brass nuts, washers complete in all respects.(Jaquar Cat No. ALD 803AB or Equivalent model of Kohlar/Roca)</p> <p>One No. fully automatic soap dispenser Jaquar cat. No. ACN-1135N or Equivalent model of Kohlar/Roca</p> <p>Wash Basin item as Described Above</p>	45	Each	
22	<p>Providing and fixing white vitreous china wash basin with special fabricated brackets painted white, faucets as required, 32 mm C.P. brass waste.32 mm C.P. brass bottle trap & pipe to wall with rubber adopter for waste connection and C.P. brass wall flange complete in all respects including cutting and making good the walls where required comprising of Following:-.</p> <p>One No. Flat Back Wash basin Jaquar Model No.: CNS-WHT-801 or Equivalent model of Kohlar/Roca.</p> <p>One No. 32 mm CP brass waste Jaquar Cat. No. ALD-709 or Equivalent model of Kohlar/Roca.</p> <p>One No. 32 mm C.P. brass bottle trap with pipe to wall and C.P. wall flange Jaquar Cat. No. ALD 769 L 250 X 190 or Equivalent model of Kohlar/Roca.</p> <p>One No. 15mm C.P brass Pillar Foucet Jaquar cat. No. PRS-031 or Equivalent model of Kohlar/Roca</p> <p>One No. C.P. brass 15mm nominal bore angle valve Jaquar cat. FLR-5053N or Equivalent model of Kohlar/Roca.</p> <p>One No. 15mm C.P. copper connecting pipe 450mm long with C.P. brass nuts, washers complete in all respects.(Jaquar Cat No. ALD 803AB or Equivalent model of Kohlar/Roca)</p> <p>One No. fully automatic soap dispenser Jaquar cat. No. ACN-1135N or Equivalent model of Kohlar/Roca</p> <p>Wash Basin item as Described Above</p>	14	Each	
23	<p>Providing & Fixing vitreous china urinal basin Jaquar Model No.: URS-WHT-132530 or Equivalent model of Kohlar/Roca with C.I. Hangers, electronic flushing system Jaquar Model No.: SNR-CHR-51087 or Equivalent model of Kohlar/Roca comprising of electronic & electrical items including infrared photo cells eyes, electronically operated solenoid valve, step down equipment, electric operated,concealed piping etc. & any other item required to provide satisfactory functioning, 40 mm C.P. brass domical waste Jaquar Model No. ALD-709 or Equivalent model of Kohlar/Roca, 40 mm C.P. Cast brass bottle trap Jaquar Model No.: ALD 769 L 300 X 190 or Equivalent model of Kohlar/Roca and pipe to wall with C.P. flange complete including cutting and making good the walls and floors where required.</p>	33	Each	

24	Providing and fixing C.P. brass 15 mm nominal bore bib cock Jaquar cat. FLR-5047N or Equivalent model of Kohlar/Roca.	40	Each	
25	Providing and fixing Stainless Steel Grab Bar Jaquar cat. No. AHS-1507 or Equivalent model of Kohlar/Roca,Including cutting and making good the walls wherever required	8	Each	
26	Providing and fixing Thermoflex or Kaiflex Make thermal insulation tubing , a elastomeric flexible material having hermetic blister closed cell structure of expanded synthetic rubber over pipes of following nominal bores and thickness including protection by wrapping with 24 gauge aluminium sheet with riveted screw joints all required accessories complete as per specification.(13 mm thick)			
	For 20 mm dia Pipe	30	Metre	
	For 25 mm dia Pipe	245	Metre	
	For 32 mm dia Pipe	135	Metre	
	For 40 mm dia Pipe	285	Metre	
27	Supplying breaker machine with operator and fuel including any repair occur to machine while working should be responsibility of the supplier, all the safety measures and insurance of machine and operator will be the responsibility of the supplier. Rate will be on per day basis and working will be of 8 hours including lunch and tea break of one hour.	20	Days	
ELECTRICAL WORKS				
28	Providing, installing, testing and commissing of variable speed (VSPS) hydropneumatic system mounted on a common base plate comprising of vertical centrifugal pumping set with S.S body, stainless steel impeller and mechanical seal, shaft directly coupled to a TEFC induction motor suitable for 400/440 volts, 3 phase, 50 cycles AC supply with 150 mm dia pressure gauge with gunmetal isolation cock, vibration eliminating pads under foundation, one No. microprocessor based controller, dedicated variable frequency drive for each pump, one No.remote sensors, pressure transducers, sequence running controller, dry running Protection,motor control centre, necessary power and control cabling from MCC to pumps including required rating of MCB, one No. 60 litre capacity M.S diaphragm tank with interchangeable butyl rubber membrane,complete in all respects			
	including stainless steel grade 316 pipe suction and delivery headers and isolation/ control valves(ball valves/butterfly valves/ Nan return valves/ vibration eliminators etc as required) , power box, equipped with fuses/ isolators/circuit breakers as required.			
I)	The entire Hydropneumatic system shall be factory fitted.			
	Make-Grundfos/Wilo/Zylem			
	For Domestic Water Supply at Water Supply Pump Room			
	Set of Two Pumps (1 Working + 1 Standby)	1	Set	
	Capacity - 4.5 LPS (Each)			
	Head - 45.0 M.			
	H.P. - 5.0 HP (Approx.)			
II)	For RO Water Supply at Water Supply Pump Room			
	Set of Two Pumps (1 Working + 1 Standby)			
	Capacity - 2.5 LPS (Each)	1	Set	
	Head - 45.0 M.			

	H.P. - 3.0 HP (Approx.)			
29	Supply, installing, testing and commissioning of submersible open impeller non-clog pumps with C.I.body and to TEFC submersible motor for 415 ± 10% volts, 3 phase, 50 cycles A.C. power supply with mechanical seal, pump connector unit with rubber diaphragm and bend, vertical discharge pipe, guide pipe and chain in built level controller, sequence running controller, arrangement for both pumps together in case of emergency, audible hooter for failure or flooding, dry running Protection, including GI Medium class pipe delivery header with CI Butter fly valve, CI Dual plate non return valve, rubber vibratio eleminators & level controller complete in all respects., painting, testing and commissioning complete with approved quality and make as required as per instruction of site incharge.			
	(Pumps shall be installed in a set of two pumps One working and One standby)			
	Make-Grundfos/Wilo/Zylem			
I)	Basement & Pump Room Drainage Pumps (Pumps to be suitable to handle solids upto 12 mm size) Capacity - 4.0 LPS (Each) Head - 15 M H.P. - 1.5 HP Approx.	5	Set	
II)	Sewage Sump Pumps (Pumps to be suitable to handle solids upto 40 mm size) Capacity - 4.0 LPS (Each) Head - 15 M H.P. - 2.0 HP Approx.	2	Set	
30	Supply Installation,Testing & Commissioning of vertical self supporting Filter fabricated from MS sheet as per IS: 2825, ((minimum thickness of shall 6 mm and dished end 8 mm)) pressure gauges, sample cock, GI class 'C' face piping, CI butterfly valves and all accessories , with initial charge of filter media including anthracite, painting inside with epoxy paint and outside with two coat of red oxide primer and two or more coat of synthetic enamel paint, testing and commissioning complete.			
	Make- Pentair/ION Exchange/Thermax			
I)	Dual Media Filter For Domestic Water Supply Capacity- 7200 LPH Filtration rate- 14000 LPH/Sqm. Filter dia approx. - 900 MM Working pressure: 3.0 Kg/sq cm. Test pressure : 4.5 Kg/sq cm	1	Each	
II)	Activated Carbon Filter For Domestic Water Supply Capacity- 32400 LPH Filtration rate- 14000 LPH/Sqm. Filter dia approx. - 900 MM Working pressure: 3.0 Kg/sq cm. Test pressure : 4.5 Kg/sq cm	1	Each	
31	Supply Installation,Testing & Commissioning of metering pump type chemical doser with 100 lits. HDPE chemical grade solution tank,injection fitting assembly,suction and delivery hose upto the point of injection, capacity 0-6 lph, complete in all respects. Make-Asia LMI Chlorination of Domestic Water	1	Each	

32	<p>Supplying, installation, testing and commissioning of skid mounted fully automatic Reverse Osmosis System of output capacity 600 litres / hour designed at a minimum Flux at inlet complete as required with the following items:</p> <p>Make- Eureka Forbes/ AO Smith/ ION Exchange</p> <p>Garnet Filter (GF) - 1 No.</p> <p>Media for GF - 1 LOT</p> <p>Antiscalant Dosing System with level sensors - 1 Lot</p> <p>Cartridge Filter - 1 No.</p> <p>High pressure pump - 2 Nos (1W + 1St).</p> <p>R.O. Block - 1 No.</p> <p>Membranes - As per manufacturer design</p> <p>Pressure Tubes - 1 No.</p> <p>RO skid - 1 No.</p> <p>pH correction system - 1 No.</p> <p>Necessary instruments - 1 Lot</p> <p>Interconnecting pipe with necessary valve work - 1 Lot</p> <p>PVC (upto HP Pump) - 1 Lot</p> <p>SS (HP Pump to Membrane) - 1 Lot</p> <p>Pressure gauges - 5 Nos.</p> <p>Rotameter - 2 Nos.</p> <p>PPLC cum instrument panel - 1 No.</p> <p>Conductivity Indicator - 1 No.</p> <p>Level sensors (Antiscalant Tank) - H/L</p> <p>Level sensors (Permeate Tank) - H/L</p> <p>Solenoid Valve (Inlet) to R.O. tank - 1 No.</p> <p>Solenoid Valve (Reject) - 1 No.</p> <p>The reverse osmosis block shall be duly supplemented with adequate pretreatment and post treatment equipmnet such as filter sodium metabisulphate dosing, anti-scalant dosing and post RO treatment pH correction dosing etc. in line with the raw water characteristics and the required treated water parameters. The plant should consist of the following automation:</p> <p>The plant starts when the level at R.O. water storage tank is low and stops when the level at R.O. water storage tank is high.</p> <p>When the level is low, the raw water pump starts. High pressure pumps starts after two minutes of starting of raw water pump.</p> <p>The reject valve closes after 1 minute of starting of high pressure pump.</p> <p>If the pressure at high pressure pumps suction is low / high, the plant trips.</p> <p>When the plant stops due to high level, first the high pressure pump stops and the dump valves opens, after two minutes the raw water pumps and dosing pump stops.</p> <p>When the connectivity is high an alarm is given.</p> <p>The MIMIC provides indications for all the I/Ps and the respective O/Ps.</p> <p>R.O. plant as described above</p>	2	Set	
33	<p>Supply, installation, testing and commissioning of stainless steel R.O water storage tank (SS 316) with minimum thickness of shell is 4 mm and base is 5 mm placed at Pump Room with inlet, outlet, overflow connection complete with 25 mm dia bend for vent, ball valve for scour, mosquito proof brass overflow grating and 600 mm dia manhole cover with locable arrangement, insulated with 50 mm thick glass wool and wrapping with 24g aluminium sheet duly reveted complete as per direction of Engineer-in-charge.</p> <p>3000 Litres Capacity</p>	2	Each	

34	<p>Design, manufacture, supplying, fixing in position, testing and commissioning of the following front operated cubicle type, front access 2mm thick mild steel sheet, free standing, dust and vermin proof, switchboard with IP42 protection with hinged and lockable doors complete with interconnections, tinned copper crimping lugs, bonding to earth and painting, suitable for use at 415 volts, 3 phase 4 wire 50 Hz system and suitable for a fault level of 25 MVA symmetrical at 415 volts.</p> <p>All switchboards shall have provision for entry of cables from the top or bottom as required.</p> <p>All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The busbars insulation shall be with heat shrinkable sleeves. SMC/DMC shrouds and busbar supports shall be used. Padlocking facility shall be provided on all outgoing feeders doors and switch handles shall be lockable in OFF position.</p>			
I)	<p>Electric Panel For Water Supply Pumps at Water Supply Pump Room</p> <p>INCOMING</p> <p>1 No. 200 amps TPN MCCB with the following accessories:</p> <p>1 No. square flush mounting 0-500 volts scaled voltmeter with three way and OFF switch.</p> <p>Three phase indicating lights.</p> <p>Electrolytic high conductivity three phase and neutral tinned copper bus bar rated at 300 amps having a current density of 1 amp per Sqmm suitable to with stand symmetrical fault level of 25 MVA at 415 volts. The neutral bus bar is to be of 100% capacity.</p> <p>OUTGOING UNITS</p> <p>Four 32 Amp. TP + NL M.C.C.B. with rotary handle of breaking capacity 25KA</p> <p>Four 63 Amp. TP + NL M.C.C.B. with rotary handle of breaking capacity 25KA</p> <p>02 Nos. TPN MCCB of 125 A with 25 KA service breaking capacity for domestic & RO water hydropneumatic pumps. (Only connection to inbuilt panel of Domestic /RO water hydropneumatic system)</p> <p>4 Nos. fully automatic DOL starters with push buttons and ON/OFF indicating lights and overload relays for 1.5 to 7.5 HP pump</p> <p>4 Nos. rotary selector switch for selecting mode of operation i.e. auto/manual/off.</p> <p>4 Nos.cyclic relay for automatic duty changeover of pumps.</p> <p>4 No. single phase preventors.</p> <p>4 Nos. square flush mounting 0-30 amps scaled ammeters with three way and OFF selector switch.</p> <p>Space for 2 Nos. Level Controllers.</p> <p>Switchgear shall be suitable for the HP^S of various motors.</p> <p>4 Nos. 63 Amp. TPN MCB for Hydraupneumatic Pumps.</p> <p>4 Nos. 32 Amp. TPN MCB Spare.</p> <p>The motor control panel shall be prewired with colour coded wires with identification labels complete in all respects as required.</p>	1	Set	
II)	<p>For Drainage Sump Pump</p> <p>One incoming main MCCB unit of 63 amps rating.</p> <p>Copper bus bar is separate chamber fully taped of 100 amps capacity.</p> <p>Two MCB units of 25 amps</p> <p>Two fully automatic DOL starters with push buttons and on/off indicating lights.</p> <p>One rotary duty selector switch</p> <p>Two manual/auto/off switches.</p>			

	<p>Two single phasing presenters.</p> <p>One panel type voltmeter with rotary selector switch for reading voltage between phases.</p> <p>Two ampere meters one for each motor.</p> <p>Three neon phase indicating lights on the incoming mains.</p> <p>Space for one liquid level controllers.</p> <p>All internal wiring colour coded from incoming mains to various switchgear, starters, meters, indicating lamps and bus bar with a changeover facility to run each pump alternatively with an alarm bell in case of both pump's running at one time. Switchgear offered must be compatible with the HP of the motors offered.</p> <p>Motor control centre as described above</p>	5	Set	
35	Providing & Fixing 1000 Litres per hour capacity water chilling plant complete with all respect.	1	Set	
36	<p>Sewage Treatment Plant 100 KLD Capacity (SBR Technology)</p> <p>Design, Supplying, Installing, Testing & Commissioning of Sewage Treatment Plant capacity 100 KLD (excluding excavation, back filling & disposal of surplus earth /Civil construction work) for the following duty:</p> <p>Nature of effluent - Domestic Sewage from Toilet use , kitchen waste and other areas of Hotel buildings.</p> <p>Incoming parameters:</p> <p>pH - 6 - 8.5</p> <p>BOD5 - upto 250-350 Mg/L</p> <p>S. Solids - 250 - 400 Mg/L</p> <p>COD - upto 450-600 Mg/L</p> <p>Oil & Grease - 50-100 Mg / L</p> <p>Final effluent discharge standard after treatment</p> <p>pH - 6.0 - 8</p> <p>BOD5 - Less than 10 Mg/L</p> <p>S. Solids - Less than 30 Mg/L</p> <p>COD - Less than 80 Mg/L</p> <p>Oil & Grease - Less than 10 Mg/L</p> <p>E Coli - Nil</p> <p>Note:- Contractor shall ensure submission of detailed GA drawings (Plan & Section), P&I diagram, schematic diagram for the above said component and additional component if so required for the complete working of the STP.</p>			
a.	Supply, installation, testing & commissioning set of 2 Nos Manual Stainless Steel Bar Screen with suitable lifting arrangement for required sizes (size 800 mm wide x 900 mm high approx.			
b.	Supply, installation, testing & commissioning one lot of electronic type level indicator and controller for automatic operation of the system with high/low level alarm complete with auxillary NO/NC contacts.			
c.	Supply, installation, testing & commissioning of non clog open impeller type pumps, having CI casing & CI impeller complete with all accessories, motor of required capacity. Delivery header with isolation valve and NRV, lifting arrangement, pressure gauge on delivery line with isolation cock level controller with wiring to control the level of sump automatically. Pump shall have following duty for reference and vendor to confirm on design base.			
c1.	<p>Submersible Sewage Transfer Pumps 2 Nos. (1 Working + 1 Standby)</p> <p>(Solid Handling Cap. 35 mm)</p> <p>Flow rate (each) = 25 M³ / Hr</p>			

	Head = 10 Mtr
c2.	Sludge Transfer Pumps 2 Nos (1 Working + 1 Standby)
	(Solid handling cap. 8.5 mm)
	Flow rate (each) = 5 M ³ / hr
	Head = 12 Mtr
d.	Supply, installation, testing & commissioning two Nos. of Twin type rotary air blowers (1 W + 1 S) Capable of delivering 200 cum/hr (each) of free air at 0.6 kg/cm ² driven through "V" belt or directly coupled through flexible coupling to a TEFC motor of suitable HP Suitable for 415 ± 10% volts, 3 phase, 50 cycles a/c supply.
e.	Supply, installation, testing & commissioning One Lot of Air piping shall comprise of pipes droppers/ laterals with M S (epoxy coated) Header complete with all fittings such as tees, crosses, plugs, sockets, elbows, reducers, supports & clamps, puddle flanges etc cutting chases & making good in Plant Room. All submerged piping will be SS-304
f.	Supply, installation, testing & commissioning of Non clog type air dispersion system capable of handling 3-5 cfm of air with oxygen transfer efficiency of 3-4% per/meter water depth. Air dispersion grid shall be assembled in modular form so that they can be replaced / repaired Fine /coarse aeration bubble diffusers as required. For sludge holding tank - 1 No. & For SBR reactor tank- 1 No.
g.	Supply, installation, testing & commissioning of Air dispersion system shall be provided for Sludge holding Tank and SBR reactor Tanks
	SS 304 : Submerged air piping
	MS Epoxy : Air piping, Filters & other Eqp.
	PVC piping ASTM SCH 40 :Pumped effluent & tank overflow pipe line
h.	Supplying, installing, testing & commissioning of 150 M ³ /Hr CI Submersible Jet Aerator in Equalization Tank 1 No.
i.	Supply, installation, testing & commissioning One No. of motorized Moving Decanter to suit SBR tank with MOC SS-304 with scum guard and connected with ultrasonic level transmitter & ultrasonic level element for automatic control etc. complete as required.
j.	Providing and fixing One No. of wall mounted Oxylite (Mixed Oxidant) Generation System, based on ECA Technology, producing non toxic mixed Oxidant Solution at 1000 ppm of Oxidant Concentration . The solution should be at a pH -7 (Neutral) suitable for 24x7 operations should produce 720 L per day .The system should have a single cell & supplied complete with appropriate dosing pumps , valves, piping, fittings, chemical dosing tank etc.
k.	Supply, installation, testing & commissioning of vertical inline multistage pumping set with Stainless steel-304 body, Stainless steel-304 impeller, Stainless steel-304 casing, shaft of Stainless steel-316 and C.I. base & head with mechanical seal, connected to a TEFC induction motor suitable for 415+/- 10% volts, 3 phase 50 cycles A.C. supply with 150 mm dia pressure gauge with gunmetal isolation cock, vibration eliminating pads under foundations, 80x40 mm I section base plate bolted to cement concrete foundations complete. Vendor to submit performance curves and technical catalogue of the proposed model for review and information.
k1.	One Set of Filter Feed Pumps
	Capacity : 10 M ³ / Hr
	Head : 25 M

	Set of Two Pumps (1 Working + 1 Standby)
l.	Supplying, installing, testing and commissioning of MSEP vessel filter with all necessary accessories. Filter shall be suitable for minimum working pressure of 5 kg / cm ² and shall include media, standard fittings like pressure gauges, sampling cock, rinse drain, vacuum breaker etc. The MS sheet thickness for shell shall be min. 8 mm and for dishes shall 10 mm. The internal surfaces of tank shall be treated with epoxy coating and external surface with primer and anticorrosive enamel paint (Min. 2 coats). with frontal piping shall be 100 mm dia MSEP along with valves PN 1.0, test cock, air inlet for back washing and pressure gauges at inlet and outlet.
11.	One No. of Multigrade Pressure Sand Filter
	Flow Rate = 10 M ³ / Hr
	Filtration velocity : 15 Cum/Hr/Sqm
	Filter HOS : 1800 MM
	Filter Diameter : 1000 MM.
12.	One No. of Activated Carbon Filter
	Flow Rate = 10 M ³ / Hr
	Filtration velocity : 15 Cum/Hr/Sqm
	Filter HOS : 1800 MM
	Filter Diameter : 1000 MM.
m.	Supply, installation, testing and commissioning One Set of Filter Press of plate as required (size 24"x 24" x 23 nos plate for reference) with screw feed pumps of 2 m ³ /hr with adequate head (1Working+1Standby) with interconnecting piping and poly dosing system all complete.
n.	Supply, installation testing and commissioning One Set of Magnetic flow meter suitable for 100 KLD Plant with preamplifier and microprocessor including necessary cabling, conduit, etc complete suitable for raw sewage application.
o.	Supply, installation, testing & commissioning One No. of the PLC based control panel with interlocking arrangement with supply pumps, suction pumps, modulating or shut-off valves including necessary wiring, magnetic switches & sensors complete to make the system functional with following interlocking
p.	Construction: Compartmentalized Type Skid Mounted, MCC Cum PLC Control panel will be free standing; vertical, fabricated from CRCA steel sheet 14/16 G conforming to degree of protection IP-52 or better. Cable entry will be from bottom. Colour shade - RAL 7032
	System Voltage: 380 to 410 Volts & 50HZ (415 V ±10% , AC, 50 HZ ±5% for India). Surge protection to be provided at every applicable point.
	PLC: The Programmable Logic Controller [PLC] shall consist of a PLC hardware, with 16k (min) program memory shall be protected by a backup battery with further memory protection from an EEPROM.
	HMI: 5.5 Inch Colour Touch screen HMI, will be mounted on A Man-Machine Interface Terminal (MMI) shall be mounted on the front of the main control panel for control of the activated sludge plant. It will provide a display of the process parameters and equipment status. The display will have an associated keypad. The system will allow operator changes to set points and control of equipment. The terminal shall include an alarm annunciation with a dedicated alarm page and allow acknowledgment of alarms.

1

Each

q.	Design, fabrication, assembling, wiring, supply, installation, testing and commissioning One No. of motor control centre shall be fabricated with reinforcement of suitable size angle iron, channel 'T' sections irons and/or flats wherever necessary. Cable gland plates shall be provided on top as well as at the bottom of the panels. Panels shall be treated with all anticorrosive process before painting as per specifications with 2 coats of red oxide primer and final approved shade of powder coated paint. 2 Nos. earthing terminals shall be provided for 3 phase, 4 wire, 50 Hz supply system. Lifting hooks shall also be provided in case of large panels.
	Incoming
	300 amps TPN MCCB with the following accessories:
	a. 0-500 volts 96 x 96 mm square electronic voltmeter with selector switch shall be protected by 2 amps TP MCB. 1 Set
	b. 0-100 amps 96 x 96 mm square electronic ammeter with selector switch and 100./5 amps 10 VA CL:1 CTs. 1 Set
	c. Phase indicating lamps shall be protected by 2 amp SP MCB 3 Sets
	Bus Bar
	200 amps TPN (15 KA) copper bus bar with heat shrinkable insulation sleeves.
	Required Nos of required capacity TPN MCB for direct on line starter/star delta starters and out going feeders to all the pumps/blowers etc. (including standbys). Each compartment shall contain auto / manual selector switch and indicating lamp with MCB's for 'ON/OFF/TRIP' status of motor
	Spare MCB's of following capacities: 32 amps TPN MCB's 3 Nos.
	All MCCBs / MCBs shall be of 15 KA breaking capacity and suitable for motor duty application.
	All motor starters shall be provided with Automatic level controller
	DOL starters shall be used for mototrs below 10HP and Star-Delta Starters for other motors
	Provision shall be made for providing potential free contacts to all pumps starters
r.	Supplying & Fixing One Lot of Cables , Conector, Cable Trays, to make Electrical Installation Complete. Necessary cable alleys, internal / cabling, wiring, cabling from MCC to various pumps / equipment and interlocking, earthing and earthing pits for all equipment
	Ultrafiltration System - 5 KL/Hr - For Generating 60 KL water for Flushing
s.	Providing & Fixing One Set of UF Module (Hollow Fibre -outside in type porocity 0.1 to 0.01 micron) including micron cartridge filter in PP housing, Pneumatic Valve, PLC Electrical Panel, flow meter, compressor and all other accessories making the system complete
	Flow rate : 6 cum/hr Output
	Inlet TSS :- 10-30 mg/lt
	Filtration Flux :- 45 lt/m2/hr
	Membrane Area - 64 M2 as per approved makes
	Membrane MOC - PVDF / PES
	Membrane Type :- Pressure Feed Mambrane 0.01-0.04 Micron rating type, Out to in process
	No. of UF Membrane - 2 Number
	Make UF Membrane - Norit / Pureflow / Koch / Dow / GE
t.	Providing & Fixing One Set of UF Feed Pump
	Capacity 6 M3/hr each (1 W + 1 SB)
	Head 20-25 Mts

	RPM 2900			
	Make - Grundfos / Wilo / Frenklin			
u.	Supply, installation, testing & commissioning One of UF pre fine filtration. It can be micron filter or Bag filter as per vendor design. The MOC of housing of filter shall be PP			
v.	Supplying, installing, testing, commissioning One Set of centrifugal Vertical UF Backwash pumps with Complete SS - 304 with motor, pressure gauge with isolation cock, Isolation valve, NRV on delivery line. Isolation valve, strainer at suction. The pump shall be suitable for 415±10% volts 3 phase AC supply .			
	Capacity : - 12 M ³ /h			
	Head : - 18- 20 m			
	No. of Pumps: 2 Nos (1 Working + 1 Standby)			
	Make - Grundfos / Wilo / Frenklin			
w.	Supplying, Installation, testing and commissioning One Set of chlorine dosing system comprising of Sintex Tank with inlet/ outlet connection, piping and valves alongwith metering pump of 6 LPH for dosing.			
	Make - Asia LMI			
x.	Supply, Installation, testing and commissioning One Set of CEB / CIP dosing sstation including dosing tank, pumps complete in all respect as per UF memrbane specification requirement			
y.	Supply installation commissioning One Set of PLC control panel with all automation required like Pneumatic valves, piping in uPVC PLC and other required accessories. Make PLC - Delta, Pneumatic Valve / Solenoid Valves, uPVC Pipe - Supreme/ Finolex, Compressor - Jeet			
z.	Providing & Fixing One Set of MS epoxy coated skid for the complete plant.			
aa.	Supply, installation & commissioning One Set of HDPE backwash tank of 500 Litre capacity including required level controller inlet, outlet, overflow and drain connection.			
	Sewage Treatment Plant as Describe Above			
37	Supplying and erecting IB LED ICBW02-20Watt or equivalent (IP 65) complete erected in position as per specification.	Each	10	
38	Supplying and installation of 10.4W non adjustable downlight with depth 55 mm, CRI>90 ,3000K CCT , Lumen 1075 lm with a 33 deg clear PC reflector including LED POWER SUPPLY 350-500mA-DC and an efficacy of 110 lm/W Make: Delta Cat no Reo X /Erco /Kreon	Each	14	
39	Supplying and installation of Trimless Flush Mounted Profile for grazing effect IP67 (customized as per site conditions) with a flex of 21.6W/m 140XSMD LED/m of Lumen output 2100lm/m dividable per 50mm ,with a McAdam Step 3 and efficacy of 97lm/W including 24V DC power supply: Make : Delta Catno: Femtoline25/Erco/Kreon	Each	900	
40	Supplying and installation of trimless floor uplight with narrow optics of 20deg with a recessed depth 100mm, 7W 774lm including of all mounting accessories CRI>90 ,colour temp (+3000K) warm white and an efficacy of 116lm/w at source (IP 67) Make: Delta Light Cat no Logic RA 93020 ANO/Erco/Kreon	Each	650	
41	Supplying and installation of floor mounted IP55 cylindrical Bollard of 250mm Dia and 210 mm height ,CRI>80,+3000K CCT 840 Lm and efficacy 133Lm/W inclusive of Power supply. Make : Delta Light Cat no Montur R P 20 LED/Erco/Kreon	Each	32	

42	Supplying and erecting of 6m Delta Light Pole with a net weight of 27 KG IP54 powdercoated with Qualicoat - Seaside quality label complete erected in position as per specification. Make: Delta Light Cat no : Polesano/Kreon/Erco	Each	8	
43	Supplying and installation of pole/surface mounted LED floodlight suitable for Polesano ,360 deg adjustable including 16X flood lens 43 deg ,CRI>80 colour temp 3000K with 42W ,4500 Lumens with an efficacy of 107 Lm/W IP66 ,Class 2 complete erected in position as per specification.Make Delta light Cat no: Polesano 830 MEDium N-B /Kreon/Erco	Each	82	
44	Supplying and installation of floor mounted spike light with white LED 6.4W ,600lm ,CRI>90 with 30deg lens including all mounting accessories and 350mA DC ,IP55 and power supply Make : Delta Light Cat no KIX M Pin/Kreon/Erco	Each	256	
45	Supplying and installation of Ceiling mounted LED light with Opal glass diffuser ,Black Finish and 6.3 W ,840Lm,CRI>80 and IP65 fixture including 350mA DC power supply , efficacy of 133lm/w ,Class 1,color temperature 3000K Warm white complete erected in position as per specification. Make : Delta Light Cat no Montur R LED WW /Erco/Kreon	Each	90	
46	Supplying and installation of Floor surface mounted spotlight with 16.8 W ,1995 Lm and a 11 deg reflector ,CRI>90 IP 65 ,efficacy of 122lm/W color temp +3000K Warm white includng 500mA DC Power Supplycomplete erected in position as per specification. Make : Delta Cat no : Kix HP 93011 N /Kreon/Erco	Each	15	
47	Supplying and erecting boundary wall light IP 65 rated specialized light with symmetric 360degree crook fittings complete.	Each	50	
48	Supply, installation, testing & commissioning of 20W LED decorative bollard light fixture IP65 including all required items.	Each	30	
	FIRE FIGHTING SYSTEM			
49	Providing and fixing 15 mm dia forged brass window nozzle type sprinkler head (K-23, with an angle of 180 Degree) with a flow rate of 40 LPM at pressure of 3.0 Kg/cm ² . Make-Tyco / Viking / HD	Each	73	
50	Providing and fixing installation valve with turbine type automatic alarm to be connected with control valve drain and test valve as per manufacturer's design. Make-HD / Tyco/Viking	Each	1	
51	Providing and fixing 25 mm dia inspecting & testing assembly with built in bye pass arrangement and connection to drain line. Make-Giocomini	Each	10	
52	Providing and fixing of Deluge valve with automatic alarm system suitable for 150 mm dia pipe including with all necessary accessories to be connected with control valve drain and test valve as per manufacturer's design. Make-Victolic / Tyco/Viking	Each	2	
53	Supply, installation, testing and commissioning of Diesel Engine driven fire pump suitable for automatic operation comprising of the following and conforming to BS 649/IS 10002 all amended upto date. Horizontal multi stage, split casing centrifugal pump, suitable for diesel engine operation . The installation shall be complete with flexible coupling and coupling guard as required. Fire pump shall have CI casing, CS diffusers, bronze impeller (hard finished and dynamically balanced) and SS (304) shaft with mechanical seal, pump shall ensure a minimum pressure of 3.5 Kg/Sqcm at the farthest or topmost hydrant / sprinkler. The installation shall be complete with necessary pressure gauge on delivery side.			

	<p>Heat exchanger cooled (secondary cooling) diesel engine of speed 1500 RPM suitable for the above pump with automatic starting mechanism and other accessories including fuel tank (fabricated from 6mm MS sheet, painted with two coats of synthetic enamel paint over a coat of primer) of capacity adequate to sustain pump operation for 8 hours continuous working. The tank shall be fitted with Magnetic oil level indicator, MH with cover, drain valve, air vent including structural supports (painted with approved shade), 2 Nos. x 12 volt battery (alternator of engine and panel is suitable for 12 volt current rating) with stand heat exchanger with necessary piping connections & fittings complete as required.</p> <p>Common base frame for (a) and (b) from M.S. Channel for required size.</p> <p>Suitable RCC / cement concrete foundation with plaster and MS angle epoxy coated edging (design and drawing to be provided by the Contractor. Complete with anti-vibration arrangement of cushy foot mountings.</p> <p>Make- Kirloskar/Matterplatt/KSB Capacity- 2850 LPM at Head- 76 M.</p>	Each	1	
54	<p>Design, manufacture, supplying, fixing in position, testing and commissioning of the following front operated cubicle type, front access 2mm thick mild steel sheet, free standing, dust and vermin proof, switchboard with IP42 protection with hinged and lockable doors complete with interconnections, tinned copper crimping lugs, bonding to earth and painting, suitable for use at 415 volts, 3 phase 4 wire 50 Hz system and suitable for a fault level of 25 MVA symmetrical at 415 volts.</p> <p>All switchboards shall have provision for entry of cables from the top or bottom as required.</p> <p>All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The busbars insulation shall be with heat shrinkable sleeves. SMC/DMC shrouds and busbar supports shall be used. Padlocking facility shall be provided on all outgoing feeders doors and switch handles shall be lockable in OFF position.</p> <p>MCC for Fire Fighting Pumps at Main Pump Room</p> <p>Incoming</p> <p>One incoming main TPN MCCB of 400 amp, 25 KA required rating.</p> <p>One-Digital voltmeter with phase selection push button = 1Nos.</p> <p>3 Phase indicating lamps, instrument fuses and switches.</p> <p>1 No. Digital Ammeter</p> <p>Bus Bar & Outgoing</p> <p>630 Amp TPN tinned copper Bus Bar.with heat shrinkable insulation sleeve.</p> <p>Two 200 Amp. TP + NL M.C.C.B. with rotary handle of breaking capacity 25KA</p> <p>One 63 Amp.TP +NL M.C.C.B. with rotary handle of breaking capacity 25KA</p> <p>One Fully Automatic Star-Delta starters suitable for 75-100 HP Pump Motor with over load relay timer push buttons and Auto/Manual selector switch and single phase preventer relay.</p> <p>One Fully Automatic Star-Delta starters suitable for Jockey Pump Motor 15 HP with over load relay, timer push buttons and Auto/Manual selector switch and single phase preventer relay.</p> <p>Two panel type Digital Amp. meters one for each motor with ASS. CTS etc.</p> <p>Two sets of On/Off - neon indicating lamp.</p>	Each	1	

	<p>One 200 Amp. TP + NL M.C.C.B. with rotary handle of breaking capacity 25KA Spare</p> <p>Diesel Engine Control</p> <p>i) Automatic selector switch and 3 attempts starting devices, electronic timer, relays, auxiliary switches, tripping relays, contactors, push buttons for manual start/stop etc., to make the equipment automatic as per the functional requirement.</p> <p>ii) Battery charging unit suitable for 24 V DC with boost & trickle charger, selector switch with suitable rating transformer, rectifier, RC filter network, fuses on AC or DC protection 0-30 A DC digital Ammeter. Charger should be cut off when the engine is started & battery shall be charged from battery charging alternator provided in the engine.</p> <p>iii) Suitable type & rating standard relays, contactors & other accessories for automatic operation the diesel engine.</p> <p>iv) Indication LED's for high/low lub oil pressure, water temperature engine on indicator with suitable alarms & acknowledge button etc.</p> <p>System Controller</p> <p>i) Designing, supply, install, testing & commissioning of system controller to control operation of main electrification pump, diesel engine pump, main sprinkler fire pump, pressurisation pump, terrace pump in sequence as per specifications. The system controller should be compatible with BMS.</p> <p>All interconnecting power & control wires/cables suitable size within the panel.</p> <p>MCC as described above</p>			
	L.T. SWITCH PANEL BOARDS			
55	<p>MAIN LT PANEL :</p> <p>Incomings:</p> <p>1 Nos. 630Amp 4 Pole MCCB's (Ics=25KA upto 433V)</p> <p>CT's of ratio 600/5Amps 1 Set</p> <p>Digital type ammeter (0-600Amp) and Voltmeter (0-500V) with selector switch - 1 Set.</p> <p>Bus Bars:</p> <p>TPN aluminium bus bars of minimum of 800 Amps capacity with heat shrinkable coloured sleeves and I/c DMC/SMC bus bars supports at required intervals complete for cross section, size supports & their spacing etc.</p> <p>Outgoings:</p> <p>4 Nos. 100Amp TPN MCB's (Ics=10KA upto 433V)</p> <p>2 Nos. 250Amp TPN MCB's (Ics=10KA upto 433V)</p> <p>6 Nos. 63Amp TPN MCB's (Ics=10KA upto 433V)</p> <p>2 Nos. 40Amp TPN MCB's (Ics=10KA upto 433V)</p> <p>3 Nos. 25Amp TPN MCB's (Ics=10KA upto 433V)</p>	Set	1	
56	<p>DISTRIBUTION PANEL :</p> <p>Incomings:</p> <p>1 Nos. 100Amp 4 Pole MCCB's (Ics=25KA upto 433V)</p> <p>CT's of ratio 100/5Amps 1 Set</p> <p>Digital type ammeter (0-100Amp) and Voltmeter (0-500V) with selector switch - 1 Set.</p> <p>Bus Bars:</p> <p>TPN aluminium bus bars of minimum of 200 Amps capacity with heat shrinkable coloured sleeves and I/c DMC/SMC bus bars supports at required intervals complete for cross section, size supports & their spacing etc.</p>	Set	3	

	Outgoings:			
	10 Nos. 63Amp TPN MCB's (Ics=10KA upto 433V)			
	4 Nos. 63Amp TPN MCB's (Ics=10KA upto 433V)			
	6 Nos. 63Amp DP MCB's (Ics=10KA upto 433V)			
	CCTV			
57	<p>Outdoor Bullet/BOX Camera: Supply, installation, testing and commissioning of 5MP Bullet/BOX camera , Total sensor pixels 5MP(3700-3900)x(1700-1900)@30FPS, Built-in/external 850nm IR illuminator intensity adjustable with 50meter viewing distance, Fully configurable quad streaming with minimum 3 streams should be configure at full resolution , full fps (5MP@30FPS), Color 0.5lx, Mono 0.05 lx, With IR 0.0 lx, 100dB WDR AS PER IEC62676-PART5 , True day/night, Electronic shutter, DNR, BLC, defog, Privacy Masking- Four independent areas, fully programmable, Full duplex / half duplex Audio Streaming, Varifocal 3 to 12 mm lens auto zoom and focus, Micro SD card slot with minimum 512GB , three layer Password protection,HTTPS, On board trusted platfperm module, public key infrastructre, encryption TLS, SSL, DES, 3DES, AES256 Bit encryption, camera temp support minimum +60deg c ,ONVIF Profile S, IP67, IK10, CE, FCC, UL Certified. Camera shall support analytics Line crossing Enter /leave field Follow route Loitering Idle / removed object People counting Crowd density estimation</p>	Nos.	105	
	<p>Outdoor PTZ Camera: Supply, installation, testing and commissioning of 1080p HD IP outdoor PTZ Cameras with 1/3" or better progressivescan Exmor CMOS , 1920 (H) X 1080 (V); @60fps at all resolution, 2 MP or better, 30 X opticalZoom (4.3~4.5 mm -129~135 mm) , 14X Digital Zoom, Minimum illuminationSensitivity- Color 0.05 lx , B/W : 0.01 Lx , WDR Min 90 as per IEC62676-PART 5 , Dynamic Noise Reduction, Backlight compensation BLC , Fully configurable quad streaming with minimum 3 streams should be configure at h.264 @25fps, White Balance, Mechanical Switchable IR filter , PAN Range 360 Degree continuous, TiltRange 3 to -90 degree, PAN/TILT Modes- PAN : 0.01 Deg / S-240 Deg / s, Tilt: 0.1 Deg /S -120 deg / S, Presets 256 , People counting Crowd density estimation</p>			
58	<p>Tours , Audio 1/2 Channelln/Out , Micro SD card slot with minimum 512GB , three layer Password protection,HTTPS, On board trusted platfperm module, public key infrastructre, encryption TLS, SSL, DES, 3DES, AES256 Bit encryption, 24 individually configurable privacymasks, Alarm inputs/ outputs -2/1 , IR Distance 180 meter (360 deg rotation) without lossof any details , Dual Power option (POE -Power on Ethernet +, AC) , De-fog , IP-66 , ONVIF Profile S , camera temp support minimum +60deg c,CE , UL Certified with allmounting accessories.</p>	Nos.	13	
	Camera shall support analytics			
59	<p>Supply, installation, testing and commissioning of Line crossing Enter /leave field</p>	Nos.	4	

60	Supply, installation, testing and commissioning of Follow route Loitering	Nos.	1	
61	Supply, installation, testing and commissioning of Idle / removed object	Lot	1	
62	Computer Supply, installation, testing and commissioning of PC with Operating system Windows 8.1 (64-bit, Professional or Enterprise)Windows 10 (64-bit, Professional or Enterprise, patched with Anniversary, CPU Intel Core i7 4770 3.4 GHz (up to 3.9 GHz) RAM 8 GB, Free disk space Minimum 3 GB for Single Site Systems ,Minimum 5 GB for Enterprise Systems, Network card 1000Base-T and supported upto 4 Graphics Card with 21” or higher professional monitor (1920x1080 or higher resolution)	Nos.	1	
63	Monitor Supply, installation, testing and commissioning of 42" LED Monitor Complete with Wall mounting kit	Nos.	4	
64	Supply, installation, testing and commissioning of Industrial Grade Layer 2 Switch with 16 PoE Port and 2 optic fiber ports with suitable wall mount rack.	Nos.	8	
65	Supply, installation, testing and commissioning of Industrial Grade Layer 3 Switch with 16 PoE Port and 16 optic fiber ports with suitable wall mount rack.	Nos.	1	
66	Supply, installation, testing and commissioning of unarmoured 12 core single mode OFC as per tender specification	Nos.	1800	
67	Supply, installation, testing and commissioning of OFC accessories like 24/36 Port LIU24 , Splice trays, Loaded Adaptor and Blank Plates, UTP and Optical Patch Cords , pigtails etc. as per schematic and system design of tender specification	Lot	1	
	Supply, installation, testing and commissioning of of Armoured 3x1.5 sq mm Power Cable	RM	1800	
	Supply, installation, testing and commissioning of RACK & Mounts as required.	Nos.	1	
68	Supply, installation, testing and commissioning of Floor mountable Equipment rack with openable door and power strip suitable for control equipments. Along with inbuilt Fire Suppression system with following specifications..... 3.0 Ltr Cylinder with Valve, Agent (Novec 1230),Master Kit comprising of Solenoid Actuator with manual override,Discharge hose, Pressure gauge, Connectors, Cylinder support straps, Discharge pressure switch,Power Supply Unit, Control Unit, Display Unit, Multisensor detectors (2 nos), Time delay,Harness & Connectors.Nozzles (2 Rack discharge).	Nos.	1	
	FIRE ALARM			
69	Supply, Installation, Testing and Commissioning of 4 loop addressable fire alarm control panel, expandable upto 32 loops. Controller shall be 5.7 inch color touch screen display with stylus(320*240 pixels), inbuilt networking port(both RS485&Ethernet),Serial port for printer,two supervisory inputs,two position key switch and USB port for programming. The Panel shall handle 4096 detection points, 10,000 history events,menu driven user interface with smart search. The events shall be displayed in different colors- red for alarm events & yellow for trouble etc. for easy identification. The Panel shall be VDS/EN 54 approved.	Nos.	1	

70	Supply, Installation, Testing and Commissioning of addressable Smoke detector with LED....etc.complete as required with 2 inbuilt isolators as per NFPA 72 style 7 wiring requirements (one for incoming and one for outgoing line) for maintaining operational availability of all elements in the loop in the event of a short circuit and to meet style 7 requirements. High resistance to electromagnetic effects in accordance with EFSG agreement EFSG/F/97/005 .Detector should monitor Electromagnetic interference and report to the panel - current and average values. EMC safety for detector shall be 50 V/m. Shall be EN54/ VDs/UL certification. (Detectors with Inbuilt Isolators)	Nos.	160	
71	Supply, Installation, Testing and Commissioning of addressable Heat detector with LED....etc.complete as required with 2 inbuilt isolators as per NFPA 72 style 7 wiring requirements (one for incoming and one for outgoing line) for maintaining operational availability of all elements in the loop in the event of a short circuit and to meet style 7 requirements. High resistance to electromagnetic effects in accordance with EFSG agreement EFSG/F/97/005 .Detector should monitor Electromagnetic interference and report to the panel - current and average values. EMC safety for detector shall be 50 V/m. Shall be EN54/ VDs/UL certification. (Detectors with Inbuilt Isolators)	Nos.	10	
72	Supply, Installation, Testing and Commissioning of Stand alone Loop Powered Addressable sounder with inbuilt isolators & with 32 different tone variants selection options & adjustable sound pressure by 5 levels, the sound pressure 101.3dB , it should be programmed from the panel. Shall be EN54 / Vds/UL Certification.	Nos.	8	
73	Supply, Installation, Testing and Commissioning of addressable manual break glass unit (Double action) with inbuilt isolators as per NFPA 72 style 7 wiring requirements, with flexible network structures & necessary fixing arrangements with key complete as required. Shall be EN 54 / Vds/UL Certification.	Nos.	8	
74	Supply, Installation, testing and commissioning of Intelligent Addressable Control Modules/Relay Module/Telephone Module for Tripping AHU's, Lifts, Hooters, Speaker zoning, telephone jack,Ventilation & pressurization fans etc complete as required & having UL certification	Nos.	4	
75	Supply, Installation, testing and commissioning of Addressable Monitor Modules to connect NO/NC contacts for monitoring flow switches, fire exit doors, & gas suppression system etc.complete as required & having UL certification	Nos.	4	
76	Supply & Fixing 2 Core 1.5 sq. mm. 500V Mineral Insulated Copper Cable with Welded outer copper sheath Fire Survival type, which can withstand 950 Deg C for three hours as per BS 6387 and shall also withstand CWZ test on one single Cable as per BS 8434-2. The cable shall be approved by LPCB, and the performance requirement should as per IEC 60331, BS 5839-1, BS 6387, and BS 8434 standards,The cable should be supplied and installed with all accessories as per BS EN 60702 part 2	RM	3000	
77	Supply & Fixing of Glands & seals for above cable complete as required.	Nos.	388	
	GROUND SOUND SYSTEM			

78	Supply, installation, testing and commissioning of Digital Signal Processor with 2 x XLR IN, electronically balanced audio input,6 x XLR OUT, electronically balanced audio output with 2 x XLR Thru out ,and 1x XLR AES/EBU IN digital input,with Nominal Input Voltage:1.23V / +4 dBu, maximum output voltage:8.7V / +21 dBu,input impedance :10k Ohm,CMR:-80dB@1kHz,A/D &D/A coversion :24 bit sigma delta,THD+N <0.01%.	Each	1	
79	Supply, installation, testing and commissioning of Dual 12" Two-Way Weatherised Vertical Line array Speaker (IP 55 rated or better) with a Frequency Response(-3dB):- 100-14KHz & Long Term Power Handling of>= 600W. Power Taps @100V : 150W,300W,600W.The Loudspeaker should have a Sensitivity(1W/1m) of 105dB with Max. SPL of >=139dB peak. OEM Munting Grid included.	Each	16	
80	Supply, installation, testing and commissioning of Dual/Four channel power amplifier with inbuilt DSP, Max Midband Output Power >=900W @ 8 Ω; >=1700W @ 4 Ω & >=2500W @ 2 Ω,Max Bridged Output Power>=6000W @ 4 ohms,70 V & 100 V Operation,Frequency Response, ref. 1 KHz: 10Hz - 21 KHz (±1dB), THD:<0.05%, Max input level >= +21 dBu, input impedance:20 kΩ, Signal to Noise ratio >= 104 dB, Crosstalk < -80 dB with built in protection such as Audio Limiters,output delay per channel,31 band GEQ per channel,PEQ per channel, Power remote via switch,delay time selectable,floating relay contacts,inputs for presets selection.	Each	4	
81	Supply, installation, testing and commissioning of 10 channel Compact Mixing System (6 x Mic/Line + 4 x Mic/Stereo-Line), Auxiliarys (MON, FX, AUX) : 2 Pre, 2 Post, 2 Pre/Post switchable, Frequency Response, -3 dB, ref. 1 kHz : 15 Hz to 65 kHz, Crosstalk, 1 kHz Channel to Channel < -80 dB, THD at 1 kHz < 0.005%, CMRR MIC input 1 kHz > 80 dB, Dual stereo 24/48-bit multi effects processors, 100 Factory + 20 User, Tap-Delay, Digital Audio Interface Channels : 4 In / 4 Out, AD/DA Conversion, Sampling Rate : 24-bit, 44.1 / 48 / 88.2 / 96 kHz.	Each	1	
82	Supply, installation, testing and commissioning of Freestanding Gooseneck Mic with base for podium having dual condensor back electret microphone element ,Selectable Omnidirectional/ Cardioid/ Supercardioid/ Hyper Cardioid polar pattern,LED status display and with programmable button for Push to Talk or Push to Mute functions having ,frequency response 50Hz-20kHz ,sensitivity 5.5mV/Pa,clipping level >125dB SPL ,output impendence 200 ohm, Dynamic Range > 100 dB.	Each	2	
83	Supply, installation, testing and commissioning of Handheld Wireless Mic with Cardioid polar pattern for transmitter,Dynamic microphone with Neodymium magnet , Receiver frequency response 80Hz-18kHz,Receiver RF sensitivity < 1.0 μV,Receiver Image rejection>55dB,Receiver Dyanmic range >95dB and receiver having 32 channels possible,Receiver S/N ratio >100dB A,distortion <1 % , Transmitter sensitivity - 3.2 mV/Pa,modulation:+/-40kHz	Each	2	
84	Supply installation testing and commissioning of 4 sq mm 2 core speaker cable	RM	3000	
85	Supply installation testing and commissioning of Microphone cable.	RM	1000	
86	Supply, installation, testing and commissioning of Speakon,XLR Male & Female,Phono connector,RCA to Phono patch cord,RCA to RCA Patch cord	Lot	1	
87	Supply, installation, testing and commissioning of Audio Earthing	Nos.	1	

88	Supply, installation, testing and commissioning of Floor mountable Equipment rack with openable door and power strip suitable for control equipments. Along with inbuilt Fire Suppression system with following specifications..... 3.0 Ltr Cylinder with Valve, Agent (Novec 1230),Master Kit comprising of Solenoid Actuator with manual override,Discharge hose, Pressure gauge, Connectors, Cylinder support straps, Discharge pressure switch,Power Supply Unit, Control Unit, Display Unit, Multisensor detectors (2 nos), Time delay,Harness & Connectors.Nozzles (2 Rack discharge).	Nos.	1	
89	Supply, installation, testing and commissioning of Led Screen Details Led Pitch = P-10,(smd-rgb) Led Screen Type = RGB - Full Color Dimensions = 12(Height) x 20(Width) Feets, Total Feets = 240 sq feet, Luminance = 6000 - 7000 Nits, Led Type = Outdoors, IP65, chipset = EPISTAR - Taiwan, Power Supply = 5V , 190-124v, constant current, Scan = Constant Scanning mode Led Screen Details Led Pitch = P-10,(smd-rgb) Led Screen Type = RGB - Full Color Dimensions = 12(Height) x 20(Width) Feets, Total Feets = 240 sq feet, Luminance = 6000 - 7000 Nits, Led Type = Outdoors, IP65, chipset = EPISTAR - Taiwan, Power Supply = 5V , 190-124v, constant current, Scan = Constant Scanning mode	Nos	3	
	PUBLIC ADDRES SYSTEM			
90	Supply, installation, testing and commissioning of Digital Public Address and Emergency Sound System Controller certified to International standards of Emergency Sound System EN 54 (IEC 60849) with following features : One working & one Hot Standby /Redundant, in case of failure of any of the controller the another system must automatic switchover without any manual intervention - Completely digital audio and control data transmission. - Fibre/ CAT 5 connection for digital network and connection to amplifiers and other interface. - In-built Digital Message storage with min 1gB capacity for 3 hrs of audio messages. - PC based programmable inbuilt Web server." - External Alarm Inputs /Programmable auto relay of pre recorded messages/Alarm tones/messages - Automatic Fault Diagnostic and reporting at central location- From Mic Capsule in call station uptil amplifiers and loudspeaker circuits.The system shall be able to make emergency calls (all calls) even if the network controller has failed - Freely programmable 200 level of priority/ around 50 Different chime/alarm tones, freely programmable/modifiable zone assignment and routing - Upgradation requires no changes in control equipment, - provision for more 248 zones from single controller	Nos	1	
91	Supply, installation, testing and commissioning of Remote Call Station with Keypads	Nos	2	

92	<p>Supply, installation, testing and commissioning of EN 54 certified Remote call station with interface unit is to be used for calling purpose and other applications with following features: - Connects to call station interface via CAT-5 cable - Up to 1 km from digital public address optical network - Built-in limiter - 2 supervised control inputs</p>	Nos	2	
93	<p>Supply, installation, testing and commissioning of EN 54 certified Digital Class-D Amplifier 500W each with single/dual channels as per the design/tender requirement. The amplifiers should have digital audio interface connection to network controller via Fiber optics/CAT 5 . Features- Inbuilt Digital Audio signal processing like 3 section parametric equalisation - Built in or external min 1 channel Automatic Volume control circuitry for noise sensing, Front LCD Character Display for status information. - Compliance to Standards for Emergency sound System IEC 60849 - Inbuilt Amplifier Monitoring eg for Short Circuit etc. Inbuilt Output monitoring - Loudspeaker line monitoring for every zone/speaker circuit - Automatic Amplifier Changeover to hot standby amplifier in case of failure of working amplifier with internal relays. - output voltage between 100V, 70V or 50V by changing jumpers - Separate amplifiers or separate channels of amplifiers for every zone should be considered - digital signal processing for audio - 2 auxiliary audio inputs with microphone/line level selection - 8 x control inputs are freely programmable - 1 x control outputs shall be freely programmable and can be programmed for faults and calls - designed for redundant network wiring - 3 sections of parametric equalization and 2 sections of shelving equalization and audio delay</p>	Nos	20	
94	<p>Supply, installation, testing and commissioning of 6W ceiling mount EN 54 certified speaker with suitable fire dome having the following specification: - Max Power: 9W, Rated Power: 6Watts, Power Tapping: 6/3/1.5W - Effective frequency range(-10 dB) :90 Hz to 20KHz - SPL at rated power (1Khz at 1 m) 98 dB - Opening Angle 1 KHz / 4 KHz (-6 dB): 180/50 Diameter 216 mm (8.5 in) Maximum depth 90 mm (3.54 in)</p>	Nos	8	
95	<p>Supply, installation, testing and commissioning of IP65 two-way, full-range Speaker, Long throw 5.25" (133 mm) woofer housed in a UL 94-5VB fire rated ABS plastic for extended LF performance down to 55 Hz. 90 W power handling provides for 108 dB maximum SPL (114 dB Peak). 60 W transformer with 8 ÷ pass- through. Frequency response (-10 dB) 55 Hz - 20 kHz. Transformer taps: 100V: 60 W, 30 W, 15 W, 8÷. IP-65</p>	Nos	64	

96	<p>Supply, installation, testing and commissioning of Rugged & beautiful green garden speaker which harmoniously merges with the outdoor garden environment. Fitted with two nos. of wide response and water resistant polypropylene speakers.</p> <p>Input Power - 40W RMS Power Taps on 100V - 40/20/10/5W Impedance - 250/500/1k/2kΩ Frequency Response 160-16,000Hz SPL at 1kHz (1W/1m) 88dB, GS-6401T</p>	Nos	78	
97	<p>Supply, installation, testing and commissioning of EN 54 certified 10 W high-efficiency ABS horn loudspeaker with weather protection IP65</p> <ul style="list-style-type: none"> - Max. Power: 15 W, Rated Power: 10 Watts, Power tapping: 10 / 5 / 2.5 / 1.25 W - Effective frequency range(-10 dB) :280 Hz to 5800 Hz - SPL at rated power (1Khz) 112 dB, Opening angle at 1 kHz / 4 kHz (-6 dB) Horizontal 120° / 35° Vertical 125° / 35° - Self extinguishing acc. to UL94 V0 - IP65 acc. to IEC 60529, Safety acc. to EN60065 	Nos	95	
98	<p>Supply, installation, testing and commissioning of Floor mountable Equipment rack with openable door and power strip suitable for amplifier & Controller. Along with inbuilt Fire Suppression system with following specifications..... 3.0 Ltr Cylinder with Valve, Agent (Novec 1230), Master Kit comprising of Solenoid Actuator with manual override, Discharge hose, Pressure gauge, Connectors, Cylinder support straps, Discharge pressure switch, Power Supply Unit, Control Unit, Display Unit, Multisensor detectors (2 nos), Time delay, Harness & Connectors. Nozzles (2 Rack discharge).</p>	Nos	1	
99	<p>Supply, installation, testing and commissioning of 2 Core 1.5 sq. mm. 500V Mineral Insulated Copper Cable with Welded outer copper sheath Fire Survival type, which can withstand 950 Deg C for three hours as per BS 6387 and shall also withstand CWZ test on one single Cable as per BS 8434. The cable shall be approved by LPCB, and the performance requirement should as per IEC 60331, BS 5839-1, BS 6387, and BS 8434 standards, The cable should be supplied and installed with all accessories / terminations / glands as per BS EN 60702 part 2</p>	Mtr	2000	
100	<p>Supply, installation, testing and commissioning of Glands & seals for above cable complete as required.</p>	Nos	490	
101	<p>Supply, installation, testing and commissioning of Network cable assembly 0.5m LBB4416/01</p>	Nos	20	
102	<p>Supply, installation, testing and commissioning of Network cable assembly 5 m LBB4416/05</p>	Nos	2	
103	<p>Supply, installation, testing and commissioning of Network cable assembly 10 m LBB4416/10</p>	Nos	2	
104	<p>Supply, installation, testing and commissioning of Speaker Junction Box</p>	Nos	245	
105	<p>Supply, Installation, Testing & Commissioning OEM Manufactured Grid for hanging Line array speakers & subwoofers</p>	Each	2	

106	Supply, Installation, Testing & Commissioning of Compact 2 Way/ 3 Way Line array element , with dispersion pattern (H) 90° or better ; a Frequency Response (-3dB):- 80 Hz – 19 kHz or better & Continuous Power Handling (RMS) range from 400W- 700W (100 Hrs testing).The loudspeaker should have a sensitivity of ≥ 101 dB. The Loudspeaker should have a Max. SPL (Peak) of ≥ 130 dB. It should have Minimum 2 x 8" or Better Driver for LF; ≥ 2 x 1" drivers for HF reproduction or more.	Each	8	
107	Supply, Installation, Testing & Commissioning of flying Dual 15" arrayable subwoofer with same footprints as Main Line array elements for Arraying in the same frame, having a Freq. Range (-10 dB) of 30 Hz - 250Hz & Freq. It should have an axial Sensitivity of ≥ 99 dB (1W/1m) or more delivering a Max. Calculated SPL(Continuous) of ≥ 128 dB.The loudspeaker should have a nominal impedance :4ohm and continuous Power Handling of 1000W or more.	Each	2	
108	Supply, Installation, Testing & Commissioning of compact two-way loudspeaker Freq. Response1 (-3 dB):70 Hz - 16 kHz Freq. Range1 (-10 dB):60 Hz - 20 kHz Rotatable Coverage: 90° x 50° Axial Sensitivity1: 94 dB (1 W/1 m) Max.Calculated SPL1: 122 dB or more, Passive Power Handling: 200 W continuous, 800 W peak Impedance: 8 ohms (nominal), 6.0 ohms (min.)	Each	4	
109	Supply, Installation, Testing & Commissioning of Dual 6" two-Way Speaker with a Frequency Range(-10dB):- 62Hz-20Khz & Long Term Power Handling of ≥ 150 W (at Nominal Impedance of 8ohms). The Loudspeaker should have a Sensitivity(1W/1m) of 94dB with a Max. SPL of ≥ 118 dB. It should have Built in LMT with Power Taps of 7.5/15/30W at 70/100V Line. The Sound Dispersion should be 100x80 Degrees or better. The Speaker Should Come with OEM wall Mounting Bracket with a Sweep Range of upto 100Degrees.	Pair	1	
110	Supply, Installation, Testing & Commissioning of 12" Two-way Powered Speaker with one 1" HF transducer with a Frequency Response(-3dB):- 65Hz-18KHz & In built class D Power amplifier of 1000 W or better. The Loudspeaker should have a Max. SPL of ≥ 126 dB.The Sound Dispersion should be 90x60 Degree. The speaker should have both built in line level inputs & multiple DSP functions like delay.	Each	2	
111	Supply installation testing and commissioning of Dual channel Class AB/Class D power amplifier with inbuilt DSP, Max Midband Output Power ≥ 950 W @ 8 Ω ; ≥ 1800 W @ 4 Ω & ≥ 3200 W @ 2 Ω ,Max Bridged Output Power ≥ 6000 W @ 4 ohms,70 V & 100 V Operation,Frequency Response, ref. 1 KHz: 10Hz - 21 KHz (± 1 dB), THD: $< 0.05\%$, Max input level $\geq +21$ dBu, input impedance:20 k Ω , Signal to Noise ratio ≥ 109 dB, Crosstalk < -80 dB with built in protection such as Audio Limiters,output delay per channel,31 band GEQ per channel,PEQ per channel, Power remote via switch,delay time selectable,floatng relay contacts,inputs for presets selection.	Each	3	

112	Supply installation testing and commissioning of Dual channel Class H/Class D power amplifier with inbuilt DSP, Max Midband Output Power $\geq 350W @ 8 \Omega$; $\geq 660W @ 4 \Omega$ & $\geq 1100W @ 2 \Omega$, Max Bridged Output Power $\geq 2000W @ 4 \Omega$, 70 V & 100 V Operation, Frequency Response, ref. 1 KHz: 10Hz - 21 KHz ($\pm 1dB$), THD: $< 0.05\%$, Max input level $\geq +21$ dBu, input impedance: $20 k\Omega$, Signal to Noise ratio ≥ 104 dB, Crosstalk < -80 dB with built in protection such as Audio Limiters, output delay per channel, 31 band GEQ per channel, PEQ per channel, Power remote via switch, delay time selectable, floating relay contacts, inputs for presets selection.	Each	3	
113	Supply, Installation, Testing & Commissioning of Single Channel amplifier providing 70V/100V Rated Output Power (*Rated Load); THD $< 1\%$, 1kHz; 270W ; Rated Output Power (*Rated Load) ; THD $< 0.2\%$, 20Hz...20kHz ; 250W Slew Rate at 1kHz 41V/ μs ; Frequency Response, (-1dB), 1kHz 70Hz - 20kHz; Power Bandwidth THD=1%, Half Power : 45Hz - > 20 kHz; Input Impedance, 20Hz ... 20kHz, Balanced; $> 20k\Omega$; Signal-to-Noise Ratio, A-Weighted > 101 dB.	Each	1	
114	Supply, Installation, Testing & Commissioning of Digital Signal Processor with 2 x XLR IN, electronically balanced audio input, 6 x XLR OUT, electronically balanced audio output with 2 x XLR Thru out ,and 1x XLR AES/EBU IN digital input, with Nominal Input Voltage: 1.23V / +4 dBu, maximum output voltage: 8.7V / +21 dBu, input impedance : $10k \Omega$, CMR: $-80dB @ 1kHz$, A/D & D/A conversion : 24 bit sigma delta, THD+N $< 0.01\%$	Each	1	
115	Supply, Installation, Testing & Commissioning of 22 channel Compact Mixing System (18 x Mic/Line + 4 x Mic/Stereo-Line), Auxiliaries (MON, FX, AUX) : 2 Pre, 2 Post, 2 Pre/Post switchable, Frequency Response, -3 dB, ref. 1 kHz : 15 Hz to 65 kHz, Crosstalk, 1 kHz Channel to Channel < -80 dB, THD at 1 kHz $< 0.005\%$, CMRR MIC input 1 kHz > 80 dB, Dual stereo 24/48-bit multi effects processors, 100 Factory + 20 User, Tap-Delay, Digital Audio Interface Channels : 4 In / 4 Out, AD/DA Conversion, Sampling Rate : 24-bit, 44.1 / 48 / 88.2 / 96 kHz. Makes:	Each	1	
116	Supply, Installation, Testing & Commissioning of Corded Vocal Microphone with ON/OFF switch with Dynamic neodymium magnet based microphone element with frequency response of 80Hz-16kHz or better ,sensitivity of ≥ 2.2 mV/Pa ,rated impedance of 600 ohm.	Each	4	
117	Supply, Installation, Testing & Commissioning of Tight cardioid Condenser microphone with frequency response of 48Hz-15kHz or better ,Cardioid polar pattern,sensitivity of ≥ 7.0 mV/Pa ,rated impedance of ≥ 200 ohm	Each	4	
118	Supply, Installation, Testing & Commissioning of Freestanding Gooseneck Mic with base for podium having dual condenser back electret microphone element ,Selectable Omnidirectional/ Cardioid/ Supercardioid/ Hyper Cardioid polar pattern, LED status display and with programmable button for Push to Talk or Push to Mute functions having ,frequency response 50Hz-20kHz ,sensitivity 5.5mV/Pa, clipping level $> 125dB$ SPL ,output impedance 200 ohm, Dynamic Range > 100 dB	Each	1	

119	Supply, Installation, Testing & Commissioning of Handheld Wireless Mic with Cardioid polar pattern for transmitter,Dynamic microphone with Neodymium magnet , Receiver frequency response 80Hz-18kHz,Receiver RF sensitivity < 1.0 μ V,Receiver Image rejection>55dB,Receiver Dyanmic range >95dB and receiver having 32 channels possible,Receiver S/N ratio >100dB A,distortion <1 %, Transmitter sensitivity - 3.2 mV/Pa,modulation:+/-40kHz	Each	2	
120	Supply, Installation, Testing & Commissioning of 2 core 2.5 sq mm armored Speaker cable	Mtr	2000	
121	Supply, Installation, Testing & Commissioning of 3 core 1.5 sq mm armored Power cable	Mtr	1000	
122	Supply, Installation, Testing & Commissioning of 2 core 4 sq mm armored Speaker cable	Mtr	400	
123	Supply, Installation, Testing & Commissioning of Microphone stand with base	Lot	1	
124	Supply, Installation, Testing & Commissioning of Leads & Connectors such as XLR Socket / Connector/Phono Socket/ Speaker Socket/ Mounting Brackets etc... with Suitable Accessories.	Lot	1	
125	Supply, Installation, Testing & Commissioning of Audio Earthing	Job	1	
126	Supply, Installation, Testing & Commissioning of Floor mountable Equipment rack with openable door and power strip suitable for control equipments. Along with inbuilt Fire Suppression system with following specifications..... 3.0 Ltr Cylinder with Valve, Agent (Novec 1230),Master Kit comprising of Solenoid Actuator with manual override,Discharge hose, Pressure gauge, Connectors, Cylinder support straps, Discharge pressure switch,Power Supply Unit, Control Unit, Display Unit, Multisensor detectors (2 nos), Time delay,Harness & Connectors.Nozzles (2 Rack discharge).	No	1	
	VIDEO SYSTEM			
127	Supply, Installation, Testing & Commissioning of 7000 Lumens projector with fixed type mounting arrangement	No	1	
128	Supply, Installation, Testing & Commissioning of Motorised Projection screen size 15x18 feet with remote control	No	1	
129	Supply, Installation, Testing & Commissioning of Dolby digital processor with <ul style="list-style-type: none"> • Eight-Channel Digital Input (4 \times AES/EBU) for Digital Cinema Server Includes support for Dolby Surround 7.1 <ul style="list-style-type: none"> • Two Digital Pair Inputs (1 \times AES/EBU) Connects alternative content sources (for example, preshow server, satellite receiver) <ul style="list-style-type: none"> • Toslink™ Digital Input Connects alternative content sources that output optical digital audio <ul style="list-style-type: none"> • Eight-Channel Analog Input Connects existing film or alternative sound processor <ul style="list-style-type: none"> • USB Connector Enables easy system setup from a PC <ul style="list-style-type: none"> • Ethernet Connector Connects with Dolby Show Manager network and/or can be monitored, controlled, or upgraded anywhere on the network for glitch-free shows. Also supports ASCII commands or remote control of the processor using the CP750 setup application <ul style="list-style-type: none"> • Premium Surround Sound Supports 5.1 and Dolby Surround 7.1 sound	No	1	

	Supply, Installation, Testing & Commissioning of Cable & connectors	Lot	1	
	HVAC WORKS			
130	Supplying, installing, testing and commissioning of Back Draft damper having 18 gauge G.I. frame and Blade in accordance with approved shop drawings and specifications complete as required.	Sqm		
131	Supplying, installing and testing of extruded aluminium Air inlet louvers with bird screen in accordance with approved shop drawings and specifications complete as required.	Sqm		
135	AIR-COOLED DUCTABLE SPLIT AC SITC of split type Ductable indoor unit and air cooled outdoor condensing units with scroll type compressor, condenser fan ,outer casing etc. Indoor unit consisting of centrifugal fan with motor ,dx cooling coil outer casing ,filter ,cotrol and power panel with remot control, MS stand for ODU shall be included. The unit has full charge of refregerant gas oil confirming to specifications. complete as required. Outdoor Air cooled condensing unit consisting of scroll type compressor , copper tube aluminium finned condenser coil, with suitable size low speed fan, all mounted in heavy gauge sheet steel enclosure with protective painting. Evaporating Unit consisting of copper tube aluminium finned high heat transfer cooling coil, refrigerant distributor and thermostatic expansion Valve along with blower and filters all in heavy gauge sheet steel metal enclosure with protective painting,etc as required			
I)	8.5 TR Ceiling suspended Ductable split units	Set		
II)	11.0 TR Ceiling suspended Ductable split units	Set		
	REFRIGERANT PIPING			
136	Supply Installation, testing, commissioning and Interconnecting refrigerant copper pipe work with closed cell elastomeric nitrile rubber tubular insulation between indoor & outdoor units as per specifications, all piping inside the room shall be properly supported with MS slotted angle, including cutting chases, hole in walls/slabs and making good the walls/slabs etc. all external piping shall run in covered cable tray item for cable tray shall be quote seperately.			
I)	9.53 mm dia 13mm thick insulation	Mtrs.		
II)	12.7 mm dia 13mm thick insulation	Mtrs.		
III)	15.9 mm dia 13mm thick insulation	Mtrs.		
IV)	19.05 mm dia 13mm thick insulation	Mtrs.		
V)	22.2 mm dia 19mm thick insulation	Mtrs.		
VI)	28.6 mm dia 19mm thick insulation	Mtrs.		
137	DRAIN PIPING			
	Providing and fixing of PVC drain pipe of 6 Kg /cm2 pressure rating complete with 6mm thick closed cell nitrile rubber insulation, fittings, supports, valves as per specifications & drawings.			
	32 mm dia	Mtrs.		
138	TUBE AXIAL FLOW FANS (Smoke exhaust)			

	Supply, Installation, Testing & Commissioning of long casing(GSS) Tube Axial flow type fans complete with aluminium alloy blades with aerofoil design, bird screen, flexible connection & gravity louvers at outlet. Motor shall be of 415 + 10% volts, 50 Hz. Sound level at 3mt distance from fan outlet shall not be more than 90db(A) (Room Condition). Capacity shall be as follows & as per detailed technical specification: Fans should be AMCA certified 2 hour fire rated at 250 deg C. .” RPM Should Not exceed 1450.			
	31000 cfm capacity with 25 mm static pressure	Each		
139	TOILET VENTILATION INLINE FAN			
	Supply, Installation, Testing and commissioning of Fresh/exhaust air fan suitable for Inline mounting comprising of forward curved centrifugal blower complete with induction motor metal clad MCB , canvas connection all complete as required, motor suitable for single phase, 230 volts, 50Hz AC. supply as per specifications of following capacities: Noiselevel should not exceed 65dB(A)at 3 meter in room condition.			
I)	900 cfm capacity with15 mm static pressure	Each	2	
II)	600 cfm capacity with15 mm static pressure	Each	12	
III)	500 cfm capacity with15 mm static pressure	Each	1	
	HVAC ELECTRICAL WORKS			
140	Basement parking Exhaust fan Stater panel			
	100 A, TPN MCCB (25 KA) with adjustable O/L fix short circuit			
	Metering:			
	0-500 Volts, digital Voltmeter with S/S and shall be protected by 2 Amps MCBs.			
	0-100 Amps digital Ammeter and 100/5A, 10VA, CL-1 CTs and selector switch.			
	Phase indicating lamps and shall be protected by 2 Amps MCBs.			
	Bus Bars:			
	150 Amps TPN Aluminium busbars, colour coded with heat shrinkable insulation sleeves.	Set	4	
	Outgoing:			
	(2) Nos. 4Pole MPCB with SD starter with contactor, O/L relay with single phase preventor suitable for 15 KW Fan motor with ON/OFF/Trip indication lamps and push buttons, potential free contacts for remote operation in each feeder and Auto Manual Selector Switch as required including auxiliary contacts for smoke signal.			
	One (1) Nos. 16 A TPN MCB as spare			
141	AIR DISTRIBUTION			
	SHEET METAL DUCT:			
	Supply, installation, balancing and commissioning of factory fabricated GSS sheet metal rectangular/round ducting complete with neoprene rubber gaskets, elbows, splitter dampers, vanes, hangers, supports etc. as per approved drawings and specifications of following sheet thickness complete as required.			
I)	Thickness 0.63 mm sheet (24G)	Sqm	585	
II)	Thickness 0.80 mm sheet (22G)	Sqm	605	
III)	Thickness 1.00 mm sheet (20G)	Sqm	920	
IV)	Thickness 1.25 mm sheet (18G)	Sqm	3400	
142	Supply, installation and testing of GI construction Volume Control dampers within ducts to be provided with suitable ducts lever and quadrants for manual control of volume of air flow and for proper balancing of the air distribution system.	Sqm	13.5	

143	Supplying & fixing of powder coated extruded aluminium Return Air Grills with louvers but without volume control dampers complete as required.	Sqm	45	
144	Supplying, fixing testing commissioning of supply air diffusers of powder coated aluminium with aluminium volume control dampers with anti smudge ring & removable core.	Sqm	5	
145	Supplying, fixing testing commissioning of Return air diffusers of powder coated aluminium without volume control dampers with anti smudge ring & removable core.	Sqm	5	
146	Supply and fixing of acoustic lining of supply air duct and plenum with 25 mm thick resin bonded glass wool having density of 32 kg/m ³ , with 25 mm X 25 mm GI section of 1.25 mm thick, at 600 mm centre to centre covered with Reinforced Plastic tissue paper and 0.5 mm thick perforated aluminum sheet fixed to inside surface of ducts with cadmium plated nuts, bolts, stick pins, CPRX compound etc. complete as required and as per specifications.	Sqm	70	
147	Supplying and fixing of following thickness duly laminated aluminum foil of mat finish closed cell Nitrile rubber (class "O") insulation on existing duct after applying two coats of cold setting adhesive (CPR X compound). The joints shall sealed with 50 mm wide and 3 mm thick self adhesive nitrile rubber tape insulation complete as per specifications and as required.			
	19mm	Sqm	250	

The sealed quotations in physical form of submission will be received up-to 2.00 p.m. on 12 / 02 / 2019 in the office of the Superintending Engineer, NMRDA, Gokulpeth Market, West high court road, Nagpur-440010 and will be opened on 12 / 02 / 2019 at 4.00 p.m. or as decided by NMRDA.

The rates should be quoted seperately for each item.

The applicant should note the following points before quoting the rates of the item.

- The rates of the items shall be inclusive of all the leads and lift for all material and labour both on site and off site and inclusive of royalty charges and excluding GST.
- The applicant should submit detailed rate analysis to support for rate quoted for items.
- The rate of the item will be inclusive of Supply, Installation, Testing and Commissioning.
- The agencies will have to write name of work & name of agency, contact number on sealed envelopes of quotation
- These rates will be used for estimation purpose only.

Sd
Superintending
Engineer,

No. SE(NMRDA)/94, Dated:-04/02/2019