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GUJARAT MINERAL DEVELOPMENT CORPORATION LTD
(A Govt. of Gujarat Enterprise)
CIN :L14100GJ1963SGC001206
GST :24AAACG7987P1ZT

TENDER NO: 05/SAPTI/DHRANGADHRA /UPGRADATION WORKS /2026

Work of Infrastructure Development includes Parking Shed, refurbishment and up-gradation with Fire Fighting & CCTV Surveillance at Stone Artisan Park for SAPTI, located at
Stone Atrisan park, Dhrangadhra , Halvad By Pass Road ,
Dist- Surendranagar
Gujarat.

TECHNICAL BID-IV

ITEMWISE SPECIFICATIONS

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Part – A- Civil Work

Item No. 1 :

Excavation for foundation up to 1.5 M depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to as per Directed (A) Loose or Soft Soil.

The item shall be executed as per the relevant specification of General Technical Specification for Building works Booklet It. No. 4.0.0. (A)/ P. No. 29.

The Item shall be measured & paid as finished work in Cum.

Item No. 2:

Excavation for foundation for depth 1.5M to 3.0 M including sorting out and stacking of useful materials and disposing of the excavated stuff up to as per Directed (B) Dense or hard Soil. The item shall be executed as per the relevant specification of General Technical Specification for Building works Booklet It. No. 4.0.0.1 (B)/ P. No. 32.

The Item shall be measured & paid as finished work in Cum.

Item No. 3 :

Filling available excavated Earth (Excluding Rock) in trench plinth side of foundation etc. in layer not exceeding 20 cm in depth consolidation each deposited layer by ramming and watering.

The Item shall be executed as per the relevant specifications of general technical specification for building work booklet Item No.4.12/ Page No.35.

The Item shall be measured & paid as finished work in Cum.

Item No. 4 :

Filling foundation and plinth with Sand under floors of 20 cm in thickness including ramming watering and consolidating etc. complete.

The Item shall be executed as per the relevant specifications of general technical specification for building work booklet Item No.4.24 Page No.35.

The Item shall be measured & paid as finished work in Cum.

Item No. 5 :

Filling foundation and plinth with Murram or selected soil in layer of 20 cm in thickness including ramming watering and consolidating etc. complete.



The Item shall be executed as per the relevant specifications of general technical specification for building work booklet Item No.4.12/ 4.0.0.4 Page No.35.

The Item shall be measured & paid as finished work in Cum.

Item No. 6 :

Providing and laying cement concrete 1.3.6. (1 cement : 3 coarse sand : 6 graded stone aggregate 6-12 to 20mm. nominal size) and curing complete including the cost of form work in foundations and plinth.

The Item shall be executed as per the relevant specifications of general technical specification for building work booklet Item No.5.3.2(A) Page No.38

The Item shall be measured & paid as finished work in Cum.

Item No. 7 :

Providing and laying cement concrete 1.2.4 (1 cement : 2 coarse sand : 4 graded stone aggregate 4-12 to 20mm. nominal size) and curing complete including the cost of form work in foundations and plinth.

The Item shall be executed as per the relevant specifications of general technical specification for building work booklet Item No.5.3.13 Page No.40

The Item shall be measured & paid as finished work in Cum.

Item No. 8 :

Providing and laying controlled cement concrete M- 250 and curing complete including the cost of form work but excluding the cost of reinforcement for reinforced concrete work in (A) **Foundations footing base of columns** and the like and mass concrete.

The Item shall be executed as per the relevant specifications of general technical specification for building work booklet Item No. 5.8.3 (A) / Page No. 47 + 9.1(G)(i)/ Page 65 except para 2.0

The Item shall be measured & paid as finished work in Cum.

Item No. 9 :

Providing and laying controlled cement concrete M.250 exposed work with curing etc. complete including the cost of form work but excluding the cost of reinforcement for R.C.C. work in:(**D**) **Column** ,Pillars up to floor two level Up to Ground level./ & Ground floor

The Item shall be executed as per the relevant specifications of general technical specification for building work booklet Item No. 5.8.3 (D) / Page No. 47 + 9.1(G)(i)/ Page 65 except Para 2.0

The Item shall be measured & paid as finished work in Cum.

**Item No. 10 :**

Providing and laying controlled cement concrete M.250 exposed work with curing etc. complete including the cost of formwork but excluding the cost of reinforcement for R.C.C. work in: **(A) BEAM**, Ground Beam & Plinth beam

The Item shall be executed as per the relevant specifications of general technical specification for building work booklet Item No.5.00.9 A (iii)/ Page No.49 + 9.1(G) (i)/ Page 65 + except para 2.0

The Item shall be measured & paid as finished work in Cum.

Item No. 11:

Providing and laying controlled cement concrete M.250 and curing complete including the cost of formwork but excluding the cost of reinforcement for reinforced concrete work in **(C) Slabs** up to Ground floor level.

The Item shall be executed as per the relevant specifications of general technical specification for building work booklet Item No.5.8.3(C)/ Page No.47 + 9.1(C)/ Page 65 except para 2.0

The Item shall be measured & paid as finished work in Cum.

Item No.12

Providing **TMT FE-500** bar reinforcement for RCC work Including bending, binding and placing in position complete All floor level.

1.0. GENERAL

This work shall consist of furnishing and placing coated, T.M.T. or high strength deformed reinforcement, bars (intentioned) of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge. The T.M.T. FE-500 bar shall be TATA, SAIL, RINL, Barnala, SSR or equivalent brand as directed by Engineer-in-charge.

2.0. MATERIAL

2.1. TMT Bars Reinforcements may be either TMT/medium tensile steel or high strength deformed bars. They may be coated with epoxy or with approved protective coatings.

2.2. TMT bars reinforcement for RCC work shall conform to IS 1786 FE-500 and shall be of tested quality. It shall also comply with relevant part of IS 456-1966

2.3. All reinforcement shall be clean and free from dirt, paint, grease or oil, oil scale or loose or thick rust at the time of placing

2.4. All steel shall be procured from original producers no re-rolled steel shall be incorporated in the work



2.5. Only new steel shall be delivered to the site every bar shall be inspected before placing to its position and defective brittle or burnt bar shall be discarded cracked ends of bars shall be discarded

3.0. Pitch

3.1. Distance between bars shall be as specified in drawings and as directed by the Engineer in Charge. All bars shall be placed at an accurate distance from each other and shall be bind tightly to maintain the desired pitch Suitable means shall be provided for holding bars securely in position

4.0. Binding wire

4.1. Mild steel binding wire shall be of 1.63 mm or 1.22 mm (16 to 18 gauge diameter and shall conform IS 280-1972

4.2. The use of black wire will be permitted for binding reinforcement bars. It shall be free from dirt, paint, grease or oil, oil scale or loose or thick rust and any other undesirable coating which may prevent adhesion of cement mortar at the time of binding

4.3. Only new binding wire shall be delivered to the site all binding wire shall be inspected before binding to its position and defective brittle, rusted, used wire, shall be discarded

5.0. PROTECTION OF REINFORCEMENT

5.1. Uncoated reinforcing steel shall be protected from rusting or chloride contamination. Reinforcements shall be free from rust, mortar, loose mill scale, grease, oil or paints. This may be ensured either by using reinforcement fresh from the factory or thoroughly cleaning all reinforcement to remove rust using any suitable method such as sand blasting, mechanical wire brushing, etc. as directed by the Engineer. Reinforcements shall be stored on bricks, racks or platforms and above the ground in a clean and dry condition and shall be suitably marked to facilitate inspection and identification.

5.2. Portions of uncoated reinforcing steel and dowels projecting from concrete shall be protected within one week after initial placing of concrete with a brush coat of neat cement mixed with water to a consistency, of thick paint. This coating shall be removed by lightly tapping with a hammer or other tool not more than one week before placing of the adjacent pour of concrete. Coated reinforcing steel shall be protected against damage to the coating. If the coating on the bars is damaged during transportation or handling and cannot be repaired, the same shall be rejected.

6.0. Workmanship

6.1. The work shall consist of furnishing and placing reinforcement to the shape and dimensions shown as on the drawings or as directed by The Engineer in charge.

6.2. Reinforcing steel shall conform accurate to the dimensions given in the bar bending schedules shown on relevant drawing

7.0. BENDING OF REINFORCEMENT



7.1. Bar bend g schedule shall be furnished by the Contractor and got approved by the Engineer before start of work.

7.2. Reinforcing steel shall conform to the dimensions and shapes given in the approved bar bending Schedules.

7.3. Bars shall be bent cold to the specified shape and dimensions or directed by the Engineer using a proper bar bender operated by hand power to obtain the correct radius of bends and shape. Bars, shall not be bent or straightened in a manner that will damage parent material or the coating bars bent during transport or handling shall, be straightened before being used on work and shall not be heated to facilitate straightening.

8.0. PLACING OF REINFORCEMENT

8.1. The reinforcement cage should generally be fabricated in the yard at ground level, and then shifted and placed in position. The reinforcement shall be placed strictly, in accordance with the drawings and shall be assembled in position, only when structure is otherwise ready for placing of concrete. Prolonged time gap, between assembling of reinforcements and casting of concrete, which may result in rust formation on the surface, shall not be permitted.

8.2. Reinforcement bars shall be placed accurately in position as shown on the drawings. The bars, crossing one another shall be tied together at every intersection with binding wire (annealed), conforming to IS: 280 to make the skeleton of the reinforcement rigid such that the reinforcement does not get displaced during placing of concrete, or any other operation. The diameter of binding wire shall not be less than 1 mm.

8.3. Bars shall be kept in. position usually by the following methods:

In case of beam an slab construction, industrially produced polymer cover blocks of thickness equal to the specified cover shall be placed between the bars and formwork subject to satisfactory evidence that the polymer composition is not harmful to concrete and reinforcement. Cover blocks made of concrete may be permitted by the Engineer, provided they have the same strength and specification as those of the member.

8.4. In case of dowels for Columns and walls the vertical reinforcement shall be kept in position by means of timber templates with slots in them accurately, or with cover blocks tied to the Reinforcement Timber templates shall be removed after the concreting has progressed up to a level just below their location.

8.5. Layers of reinforcements shall be separated by spacer bars at approximately One meter intervals. The minimum diameter of spacer bars shall be 12 mm or: equal to maximum size of main reinforcement or maximum size of coarse aggregate, whichever is greater. Horizontal reinforcement shall not be, allowed to sag between supports.



8.6. Necessary stays, blocks, metal chairs, spacers, metal hangers supporting wires etc, or other subsidiary, reinforcement shall be provided to fix the reinforcements firmly in its correct position.

8.7. Use of pebbles, broken stone, metal pipe, brick, mortar or wooden blocks etc as devices for positioning reinforcement shall not be permitted.

8.8. Placing and fixing of reinforcement shall be inspected and approved by the Engineer before concrete is deposited.

9.0. Lapping

9.1. All reinforcement shall be furnished in full lengths as indicated on the drawing. No splicing of bars, except where shown on the drawing; will be permitted without approval of the Engineer. The lengths of the splice shall be as indicated on drawing or as approved by the Engineer. Where practicable, overlapping bars shall not touch each other, and shall be kept apart by 25mm or $1:1.1/4$ times the maximum size of coarse aggregate, whichever is greater; if this is not feasible, overlapping bars shall be bound with annealed steel binding wire, not less than 1 mm diameter and twisted tight in such a manner as to maintain minimum clear cover to the reinforcement from the concrete surface. Lapped splices shall be staggered or located at points, along the span where stresses are low.

10.0 Welding

10.1 Splicing by welding of reinforcement will be permitted only if detailed on the drawing or approved by the Engineer. Weld shall develop an ultimate strength equal to or greater than that of the bars connected.

10.2. While welding may be permitted for TMT .reinforcing bars conforming to IS: 432, welding of deformed bars conforming to IS: 1786 shall in general be prohibited. Welding may be permitted in case of bars of other than S 240 grade including special. Welding grade of S 500 grade bars conforming to IS: 1786, for which necessary chemical analysis has been secured and the carbon equivalent (CE) calculated from the chemical composition using the formula: $CE = C + Mn + Cr + Mg + V + Ni + Cu$ 6 5 15 are 0.4 or less.

10.3. The method of welding shall conform to IS: 2751 and IS: 9417 and to any supplemental specifications to the satisfaction of the Engineer

10.4. Bars shall be bent cold to the specified shape and dimensions or as directed by Engineer in charge using the proper bender tool, operated by hand or power to attain proper radius of bends. Bars shall not be bending or straightened in a manner that will injure the material. Bars bent during transport or handling shall be straightened before being used in the work. Bars shall not be heated to facilitate bending.

10.5. Unless otherwise specified a 'U' type hook at the end of each bar shall invariably be provided to main reinforcement. The radius of the bane shall not be less then twice the diameter of the round bar



and the length of the straight part of the bar beyond the end of the curve shall be at least four times of the diameter of the round bar. In case of bars which are not round and in case of deformed bars, the diameter shall be taken as the diameter of circle having an equivalent effective area the hooks shall be suitably encased to prevent any spiting of the concrete.

10.6. All reinforcement bars shall be accurately placed in exact position shown on the drawings and shall be securely held in position during placing of concrete by annealed binding wire not less than 1 mm in size and by using say blocks or metal chairs spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals, Bars shall not be allowed to sag between supports not displaced during concreting or any other operations of the work All devices used for positioning shall be of not corrodible material wooden and metal supports shall not extended to the surface of the concrete, except where shown in drawings. Placing bars on layers of freshly laid concrete as the work progresses for adjusting bar spacing shall not be allowed. Pieces of broken stone or brick and wooden blocs shall not be used Layers of bars shall be separated by spacer bars pre-cast mortar blocks or other approved devices. Reinforcement after bending placed in position shall be maintained in a clean condition until completely embedded in concrete, Special care shall be exercised to prevent any displacement of reinforcement in concrete already placed. To prevent reinforcement form corrosion, concrete cover shall be provided as indicated on drawings. All bars protruding from concrete and to which other bars are to be sliced and which are likely to be exposed for a period exceeding 10 days shall be protected by a thick coat of neat cement grout

10.7. Bars crossing each other where required shall be secured by binding wire (annealed) of size not less than 1 mm in such a manner that they do not slip over at the time of fixing and concreting.

10.7. As far possible bars of full length shall be used In case this is not possible, overlapping of bars shall be done as directed by the Engineer in charge When practicable overlapping bars shall not touch each other, but be kept apart by 25 mm Where no feasible overlapping bars shall be bound with annealed wires not less than 1 mm thick twisted tight The overlaps shall be staggered for different bars and located at points along the span where neither sheer not bending moments is maximum.

10.8. Whenever indicated on drawing or desired the Engineer in charge bars shall be joined by coupling which shall have a cross section sufficient to transmit the full stresses of bars The end of the bars that are joined by coupling shall be upset for sufficient length so that the effective cross section at the base of threads is not less than the normal cross section of the bar. Threads shall be standards threads Steel for coupling shall conform to IS 226.

10.8. When permitted or specified on the drawings joints of reinforcement bars shall butt-welded so as to transmit their full stresses Welded joints shall preferably be located at points when steel will not be subject to more than 75 percent of the maximum permissible stresses and welds so staggered that at any one section not more than 20 percent of the rods are welded Only electric are welding



using a process which excludes air from the molten metal and conforms to any or other special provisions for the work shall be accepted Suitable means shall be provided for holding bars securely in position during welding It shall be ensured that no voids are left in welding and when welding is done in two or three stages previous surface shall be cleaned properly Ends of bars shall be cleaned of all loose scale rust stages paint and other foreign matter before welding Only competent welders shall be employed on the work. The M S electrodes used for welding shall conform IS 814 Welded pieces of reinforcement shall be tested. Specimen shall be taken from the actual site and their number shall frequency to test shall be as directed by the Engineer in charge

11.0 MODE OF MEASUREMENTS & PAYMENT

11.1. For the purpose of payment the bar shall be measured correct up to 10 mm length and weight payable works out at the rate specified below

1.	6 mm.	0.22 Kg. /Rmt.	8.	20 mm	2.47 Kg. /Rmt.
2.	8 mm	0.39 Kg. /Rmt.	9.	22 mm	2.98 Kg. /Rmt.
3.	10 mm	0.62 Kg. /Rmt.	10.	25 mm	3.85 Kg. /Rmt.
4.	12 mm	0.89 Kg. /Rmt.	11.	28 mm	4.83 Kg. /Rmt.
5.	14 mm	1.21 Kg. /Rmt.	12.	32 mm	6.31 Kg. /Rmt.
6.	16 mm	1.58 Kg. /Rmt.	13.	36 mm	7.99 Kg. /Rmt.
7.	18 mm	2.00 Kg. /Rmt.	14.	40 mm	9.86 Kg. /Rmt.

11.2. Reinforcement shall be measured in length including overlaps, separately for different diameters as actually used in the work. Where welding or coupling is resorted to, in place lap joints, such joints shall be measured for payment as equivalent length of overlap as per design requirement. From the length so measured, the weight of reinforcement shall be calculated in Kg. on the same basis of as per table given above. Length shall include hooks at the ends. Wastage and annealed steel wire for binding shall not be measured and the cost of these items shall be deemed to be included in the rate for reinforcement.

11.3. The rate for reinforcement includes cost of steel binding wires, cutting, bending, placing in position, binding and fixing in position as shown on the drawings and as directed. It shall also include all devices for keeping reinforcement in approved position, cost of joining as per approved method and all wastage and spacer bars.

11.4. The contract rate shall be for a unit of one kilogram for completed item as directed.

**Item No. 13**

Providing and fixing **M.S. grills** of required pattern to wooden frames of windows etc. with M.S. flats at required spacings and frame around, square or round bars with round headed bolts and nuts or by screws (A) Plain Grill

1.0. Materials

M.S. Plate shall conform to relevant IS code and enamel paint.

2.0. Workmanship

2.1. The safety Grill shall be prepared as per the drawing or as directed

2.2. The grill shall be fabricated to the designs and patterns shown in the drawings and the weight shall be as directed, and the joints shall be reveted or welded as shown in the plan or as directed. The grill shall be erected in position as directed by the Engineer in charge. The grill shall be fixed to the frame /opening with number of bolts and nuts or screws viz. bolt nut/screw per 30 cm. of the length of outer strip subject to minimum of 2 Nos. on each side of the frame or as indicated in the drawing or as directed.

2.3. The bolts and nuts or screws shall be counter sunk and shall be fixed with the top of their heads flush with the face of the frame strips.

2.4. Painting two coat of enamel paint including one coat of prime coat as per Item No. 19.7 Page No.138 in Building specification book.

3.0. Mode of measurements & payment

The unit rate of safety grill shall include the cost of all materials, cost of all necessary fixtures and fastenings, labour charges for fixing at the place shown in drawing and as instructed by Engineer in charge, all tools and plant required for assembling and fixing in position, finishing as per direction of the Engineer-in-charge, and all other incidental expenses for preparing grill of specified size as shown on the drawings and according to these specifications.

3.1. No payment shall be made for weight of screws, bolts nuts and paint etc., only weight of grill shall be paid.

3.2. The rate shall be for a unit of one kg.

Item No. 14:

Providing Material and Labour With **Fabricating & Erecting of Structural Steel Works** in required pattern/design using Structural Steel like ISMC, Box Pipe, ISMB, Angle, Plates/Bright Bars, round pipes as per detailed design/ drawings/ instructions including Straightening, Cleaning, Derusting, Cutting, Bending, Fabricating, Welding, Bolting, Riveting Hoisting, Jointing, connecting & fixing and



erecting in position for all levels For Roof work Fince & Main Gates, Etc. works Also providing & painting with one coat of zinc chromate primer and two coats of enamel paint As Approved make & shade etc.

General

This work shall consist of furnishing and placing Structural Steel having 100mm x 100mm x4.0mm , 96mm x48mm x 3.20mm, 60mm x 40mm x 2.90mm Structural steel pipe as dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge.

MATERIAL

Hollow MS. Pipe shall be confirming general Indian standards. MS Hollow pipe shall be free from the defects and shall have smooth finish.

The Material shall be free from loose miles scale rust pits or other affective

The Strength and durability

Mode of Measurement & Payment:

The Item shall be measured for its **Length** limiting dimensions to those specified on plan or as directed. (Weight Calculation as per Standered Weight Chart per Kg/ R.mt)

The payment will be made on **Kg** basis of the finished work.

The rate shall be for a unit of one Kg.

Item No. 15:

Providing Material and Labour with fixing of **Roof Top & flashing** for roof panel shall be made out of 0.5 mm thick pre coated Gl sheet. The Pre coated sheet shall be of minimum 240 mpa steel grade confirming to IS 14246:1995 and shall have zinc coating of minimum 120 gsm as per 15:277:1992, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15 18 micron. The PPGI Sheet shall have plastic protective guard film of minimum 25 microns to avoid scratches during transportation. The ridge shall be fixed to the steel members by pop rivet or self drilling/self stitching fastener @ maximum 450 mm cjc along length of capping/flashing etc complete.

This Gl Sheet will be supported on structural steel beam with shear studs.

Structural steel qty Measured & paid separately.

The Item shall be measured & paid as finished work in **Sq.Mt.**

Item No. 16 :

Providing Material and Labour With fabricating & Fixing of M.S. Fabricated Slanted Canopy with FRP sheet (Size 600 to 750mm wide) Cantilever weather shed For Window , door, Opening etc as per Directed by engineer in Charge. Slanted Canopy Making from 25mm x 25mm MS Pipe Main frame (average 600mm c/c Spacing for Main support) & 20mm x20mm internal support frame as per



Directed . Frame of required pattern & fixed to brick walls/Columns, self Standing etc, Canopy prepared with M.S. Pipe, angles, Square/round bars, square pipes, at required spacing with necessary cutting, bending, jointing, connecting, welding and bolting and riveting and fabricating and erecting in position etc. & top & Side Fixing of 2.5mm thick Plain , coloured FRP Sheet complete for all levels as directed. The rate to include all necessary fixtures, fastening, scaffolding, staging etc & Cleaning with sand papering, Cleaning Weld dots with grinder machine with smooth joint of welding, & also including one coat of primer and two coats of oil painting etc complete.

The Item shall be measured & paid as finished work in **Sq.Mt.**

Item No. 17:

(A) Providing & Constructing Brick work using common burnt clay building brick having crushing strength not less than 35 kg/sq. cm. in Cement mortar 1:5 (1 Cement : 5 fine sand) Conventional method for plinth .

The item shall be executed as per the relevant specifications of General Technical Specifications for Building works Booklet It. No.6.12[B]/P.51.

The Item shall be measured & paid as finished work in Cum.

Item No. 18 :

(B)Brick work using Common burnt clay building brick having crushing strength not less than 35 kg/sq. cm. in Cement mortar 1:5 (1 Cement : 5 fine sand) Conventional method for Ground floor.+FF

The item shall be executed as per the relevant specifications of General Technical Specifications for Building works Booklet It. No.6.20[B]/P.54

The Item shall be measured & paid as finished work in Cum.

Item No. 19 :

(A) Half brick masonry in common burnt clay building bricks having crushing strength not less than 35 kg/sq. cm. in Cement Mortar 1:4 (1 cement : 4 coarse sand Conventional method for Ground Floor.+ FF

The item shall be executed as per the relevant specifications of General Technical specifications for Building works Booklet It. No. 6.30[I][A]/P.54.+6.33 (B) P 56

The Item shall be measured & paid as finished work in Sq.Mt

Item No. 20 :



Providing material and labour for Coursed rubble masonry with hard stone of approved quality in superstructure above plinth level up to floor two level Cement Mortar 1:6 (1-Cement : 6-coarse sand) etc. complete.

The item shall be executed as per the relevant specifications of General Technical specifications for Building works Booklet It. No. 7.17[A]/P.58.+6.20 P 54

The Item shall be measured & paid as finished work in Cu.Mt

Item No. 21:

Providing and fixing window having extruded aluminum Colour Powder Coated section frame main outer size 95mm x 24mm x 1.17mm @ wt.of 0.738 Kg/mt, horizontal **Three track** member size 92mm x 31.75mm x 1.30mm @ Wt.1.07 Kg/mt, vertical member of size 92mm x 31.75mm x1.50mm ,@ Wt. 1.06 Kg/mt with sliding shutters of horizontal member size 40 mmx18mm x1.29mm @ wt.of 0.456 Kg/mt, vertical member of size 40mm x 18mm x 1.29 mm @ wt.of 0.456Kg/mt with 5 mm thick transparent bronze colour tinted float glass with powder coated aluminum fittings and fixtures and trans

MATERIAL

Aluminum standard section

Specification no M-31 from specification booklet for Building works

All section shall have finished luster surface on all sides and Quality shall be equivalent to Jindal Product

Outer frame sections shall be of **Three track**

Aluminum alloy used in the manufacture of extruded Door section shall confirm to I S designation HEA-WP of I S 733-1975 and also Designation WVG -WP of I S 1285-1975 section shall be as specified in the drawing and design.

All sections shall be Free from any scratches or holes or any damages on surface. All section shall have finished luster surface on all sides

size and weight of the Members shall be as describe in Item

SS mosquito net

Specification no 10.51 (2.2) from specification booklet for Building works Shall confirm 85 G wire net of .56 mm dia

This Styles rails ect shall be riveted 12mm along the side where they receive the gauge the stainless steel webbing of 0.56 mm dia mesh shall be used unless otherwise specified the webbing shall be at 90 to 12mm along both side of the rebate and fixed securely and neatly to the Frame

5 mm thick colour tinted glass



5 mm thick colour tinted glass Specification no M-38 from specification booklet for Building works except the glass shall be colour tinted of approved brand and colour and thickness

The glass shall be of approved make having thickness of 5 mm The glass shall be clear and free from scratches and cracks The glass shall be provided on the top

Glazing clips

Glazing clips shall be of size 19.00 x 17.00 mm. shall be Free from any scratches or holes or any damages on surface. All section shall have finished luster surface on all sides

Rubber Gasket

Rubber gasket shall be of approved make. shall be Free from any scratches or holes or any damages on surface. and shall have finished luster surface on all sides

Fixtures

Specification no M-43 from specification booklet for Building works for fixture and fastening shall be applied for this item

Handles,

handles shall be of approved make. shall be Free from any scratches or holes or any damages on surface. and shall have finished luster surface on all sides

Bolts,

All bolts shall be of approved make. shall be Free from any scratches or holes or any damages on surface. and shall have finished luster surface on all sides

WORKMANSHIP

The Work of aluminum door shall be done with extreme finishing. The partial board shall be fixed in the bottom panel and glass shall be fitted on top panel as directed by Engineer in charge using glazing clips and rubber gaskets as required All the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge. Floor spring shall be fitted properly so as to align the door properly and shall be given trial of opening and closing properly.

Mode of Measurement & Payment :

The Item shall be measured for its **breadth and height** limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.

The payment will be made on square Meter basis of the finished work.

The rate shall be for a unit of **one square meter**

Item No. 22:

Providing and fixing window having extruded aluminum Colour Powder Coated section frame main outer size 63.50 x 38.10 x 1.95 mm,@ Wt 1.094 Kg / Rmt, horizontal **Two track** member size 61.85 mm x 31.75 mm x 1.20mm @ wt.of 0.695 Kg/mt, vertical member of size 61.85 mm x 31.75mm x 1.30mm @ wt.of 0.0.659 Kg/mt with sliding shutters of horizontal member size 40mm x 18mm x



1.29mm @ wt.of 0.456Kg/mt, vertical member of size 40mm x 18mm x 1.29mm @ wt.of 0.456Kg/mt with 5 mm thick transparent bronze colour tinted float glass with powder coated aluminum fittings and fixtures and transparent silicon sealant glass fixing to frame as per details etc complete for window

MATERIAL

Aluminum standard section

Specification no M-31 from specification booklet for Building works

All section shall have finished luster surface on all sides and Quality shall be equivalent to Jindal Product

Outer frame sections shall be of **Two track**

Aluminum alloy used in the manufacture of extruded Door section shall confirm to I S designation HEA-WP of I S 733-1975 and also Designation WVG -WP of I S 1285-1975 section shall be as specified in the drawing and design.

All sections shall be Free from any scratches or holes or any damages on surface. All section shall have finished luster surface on all sides

size and weight of the Members shall be as describe in Item

SS mosquito net

Specification no 10.51 (2.2) from specification booklet for Building works Shall confirm 85 G wire net of .56 mm dia

This Styles rails ect shall be riveted 12mm along the side where they receive the gauge the stainless steel webbing of 0.56 mm dia mesh shall be used unless otherwise specified the webbing shall be at 90 to 12mm along both side of the rebate and fixed securely and neatly to the Frame

5 mm thick colour tinted glass

5 mm thick colour tinted glass Specification no M-38 from specification booklet for Building works except the glass shall be colour tinted of approved brand and colour and thickness

The glass shall be of approved make having thickness of 5 mm The glass shall be clear and free form scratches and cracks The glass shall be provided on the top

Glassing clips

Glazing clips shall be of size 19.00 x 17.00 mm. shall be Free from any scratches or holes or any damages on surface. All section shall have finished luster surface on all sides

Rubber Gasket

Rubber gasket shall be of approved make. shall be Free from any scratches or holes or any damages on surface. and shall have finished luster surface on all sides

Fixtures



Specification no M-43 from specification booklet for Building works for fixture and fastening shall be applied for this item

Handles,

handles shall be of approved make. shall be Free from any scratches or holes or any damages on surface. and shall have finished luster surface on all sides

Bolts,

All bolts shall be of approved make. shall be Free from any scratches or holes or any damages on surface. and shall have finished luster surface on all sides

WORKMANSHIP

The Work of aluminum door shall be done with extreme finishing. The partial board shall be fixed in the bottom panel and glass shall be fitted on top panel as directed by Engineer in charge using glazing clips and rubber gaskets as required All the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge. Floor spring shall be fitted properly so as to align the door properly and shall be given trial of opening and closing properly.

Mode of Measurement & Payment :

The Item shall be measured for its **breadth and height** limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.

The payment will be made on square Meter basis of the finished work.

The rate shall be for a unit of **one square meter**

Item No. 23:

Providing and fixing standard extruded of aluminium section of size 63mm x 38.10mm x 1.2mm , @ Wt. 0.643 Kg/mt with colour Powder Coated aluminium frame for ventilation with 5 mm thick frosted glass as details etc complete for Ventilation

General

This work shall consist of providing **and fixing standard extruded of aluminum ventilation** of the shape and dimensions shown on the drawings and conforming to these Specifications or as approved by the Engineer in charge

MATERIAL

Aluminum standard section

Specification no M-31 from specification booklet for Building works on surface. All section shall have finished luster surface on all sides

Glass

Specification no M-38 from specification booklet for Building works

Rubber Gasket



Rubber gasket shall be of approved make. shall be Free from any scratches or holes or any damages on surface. and shall have finished luster surface on all sides

Fixtures and fastenings

Specification no M-43 from specification booklet for Building works for fixture and fastening

WORKMANSHIP

The Work of aluminum window shall be done with extreme finishing as directed by Engineer in charge using glazing clips and rubber gaskets as required All the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge. and shall be given trial of opening and closing properly.

Mode of measurement and payment

The Item shall be measured for its **breadth and height** limiting dimensions to those specified on plan or as directed.

The payment will be made on square Meter basis of the finished work.

The rate shall be for a unit of one square meter.

Item No. 24 :

Providing and fixing of **Aluminium Partition** with Powder coated Aluminium extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make (Jindal or Equal ant Make) fixed with rawl plugs and screws or with fixing clips, or with expansion hold fasteners for fixing of vertical sections in the ceiling to support the frame including necessary filling up of gaps at junctions, top, bottom and sides with required PVC/ neoprene felt, EPDM etc. Aluminium sections shall be smooth, rust free straight, metered and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / panelling, C.P. brass/ stainless steel screws all complete as per architectural drawings and the direction of engineer-in-charge With powder coated aluminium section of 63.5mm x 38.10mm x 1.95mm (sectional weight of the Aluminium section should 1.094kg/ Rmt) with 12 mm thick both side pre-laminated flat pressed three layer of graded wood particle board conforming to IS:12823 grade I type II in panelling of partition walls as per Drawing & Partly float glass panes of 5 mm thickness (Modi, saint Gobain or equivalent) panelling of required height complete in all respect including all hardware fittings (Rate for Excluding Door, Door will be measured and Paid separately.) as per the direction of Engineer -in charge. Complete with all Labour, Material, Tools, All Hardware, Loading un loading, Scaffolding etc.

The rate shall be for a unit of **one square meter**

Item No. 25 :



Providing and fixing of **Aluminium Glass Door** with Powder coated Aluminium extruded built up standard tubular sections of approved make (Jindal or Equalant Make) fixed with rawl plugs and screws or with fixing clips, or with expansion hold fasteners for fixing of vertical sections in the ceiling to support the frame including necessary filling up of gaps at junctions, top, bottom and sides with required PVC/ neoprene felt, EPDM etc. Aluminium sections shall be smooth, rust free straight, metered and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / panelling, C.P. brass/ stainless steel screws all complete as per architectural drawings and the direction of engineer-in-charge With powder coated aluminium section of 63.5mm x 38.10mm x 1.95mm (sectional weight of the Aluminium section should 1.094kg/ Rmt) with 12 mm thick both side pre-laminated flat pressed three layer of graded wood particle board conforming to IS:12823 grade I type II in panelling of partition walls as per Drawing & Partly float glass panel of 5 mm thickness (Modi, saint Gobain or equivalent) panelling of required height complete in all respect including all hardware fittings (Rate for Including Dorma Make Medium Wt. Floor Spring ,Door Handle, Stopper, etc as per the direction of Engineer -in charge. Complete with all Labour, Material, Tools, All Hardware, Loading un loading, Scaffolding etc.

The rate shall be for a unit of **one square meter**

Item No. 26 :

Providing material and labour with fixing of 60 cm x 60 cm Glossy/ Matt finished Vitrified Tiles 9 to 10mm thk. Flooring (RAK, Qutone, Simpolo, Nexion or equivalent brand) flooring over 20 mm (average) base of cement mortar 1:3 (1 cement: 3 coarse sand) on new surface of floor by adhesive material (Polymer Chemical adhesive: Laticrete 325) including finished with flush pointing & cleaning the surface and including filling the joints with Approved Epoxy Grout (Polymer Chemical adhesive: Laticrete 325) in 3-4 mm width and 10 mm Depth including cost of PVC Spacers, Rubbing, Cleaning and finishing the surface etc. complete.

The item shall be executed as per the relevant specification of General Technical Specification for Building works Booklet It. No. 14.32 /Page No. 97. except that the 600mm x 600mm vitrified 9 to 10 mm thick tile flooring over 20 mm (average) complete for diff shed as directed by the Engineer in charge.

The payment will be made on **Square Meter** basis of the finished work.

Item No. 27 :

Providing and laying Mirror Polished Granite slab 16-18mm (Average) thick for Sill & Jambs for Door, Windows, Ventilators, Openings, Elevation Cut-outs, Planter wall top etc. as per design and Drawings incl. full molded round both edge on 10 mm thick cement mortar 1:3 (1-cement : 3-coarse sand) &



jointed with grey cement slurry including rubbing and polishing etc. complete. Granite shade As per Approved & Selection by Architect or Directed by Engg-in-Charge.

1.0 MATERIAL

WATER

1.1 Water shall not be salty brackish and shall be clean reasonably clear and free objectionable quantities of silt and traces of oil \injurious alkalis salts organic matter and other deleterious material which will either weaken the mortar of concrete or cause efflorescence or attack the steel in R C C container for transport storage and huddling of water shall be clean, Water shall confirm to the standard specified in I S 455 -1978

1.2 If required by the Engineer in charge it shall be tested by comparison with distilled water compression shall be made by means of standard cement tests for soundness time of setting and mortar strength as specified in I S 269-1976 Any indication of unsoundness charge in time of setting by 30 minutes or more or decrease of more than 10 percent strength of mortar prepared with distilled water sample when compared with the result obtained with mortar prepared with distilled water shall be sufficient cause for rejection of water under test.

1.3 Water for curing mortar concrete or masonry should not be too acidic or too alkaline

1.4 It shall be free of elements which significantly affect the hydration reaction or otherwise interface with the hardening of mortar or concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surfaces

1.5 Hard and bitter water shall not be used for curing

1.6 Potable water will generally found suitable for curing mortar or concrete

2.0 CEMENT

2.1 Cement shall be ordinary Portland slag cement as per IS 1624 -1974 or Portland slag cement as per IS 455-1976

2.2 Cement shall be stored above the ground level in perfectly dry and water tight sheds. Wherever bulk storage containers are used, their capacity should be sufficient to cater to the requirements at site and should be cleaned at least once every 3 to 4 months. The aggregate shall be stored in such a way as to prevent admixture of foreign materials. Different size of fine or coarse aggregate shall be stored in separate stock-piles sufficiently away from the each other to prevent intermixing the materials.

3.0 SAND

3.1 Sand shall be natural sand, clean well graded, hard strong durable and gritty particular free from immures amounts of dust, clay, kankar modules, soft: or flaky particles shall alkali salts, organic matter, learn mica or other deleterious substance and shall be got approved from the Engineer-in-



charge. The sand shall not contain more than 8 percent of slit as determined by field test. if necessary the sand.

Coarse Sand: The fineness modules of coarse sand shall not be less than 2.5 and shall not exceed 3.0. The sieve analysis of coarse sand be as under:—

I. S. Sieve Designation % by wt. passing 4.75 mm 100 2.36mm 90 to 100 1.18 mm 70 to 100 600 MC 30 to 100 300 MC 85 to 70 150 MC 00 to 50

3.2 FINE SAND: The fineness module shall not exceed 1.0 the sieve analysis of fine sand be as under:—

IS. Sieve Designation % by wt. passing 4.75 mm 100 2.3 6mm . 100 1.18 mm 75 to 100 600 MC 40 to 85 300 MC 05 to 50 150 MC 00 to 10

3.3 Materials shall be stored as to prevent their deterioration of their quality and fitness for the work. Any material which has deteriorated or has been damaged or is otherwise considered defective by the Engineer-in-charge shall not be used in the work.

4.0 Machine polished Granite stone slab 16 to 18mm thick as per design **(M52 Page 23)**

4.1. Granite stone shall be hard even round, and regular in shape and generally uniform in colour. The colour of the stone shall generally be Black for use. They shall be without any soft veins cranks of flaws

4.2. The size of the stone to be used for flooring shall be of as directed. However smaller sizes will be allowed to be used to the extent of maintaining required pattern. Thickness shall be as specified.

4.3. When machine cut edges are specified the exposed and the edges at joints shall be machine cut the thickness of the exposed machine cut edges shall be uniform.

4.6. The stones shall have machine polished surface. When brought on site, the stones shall be single polished or double polished depending upon its use. The stones for paving shall generally be single polished. The stones to be used for dado, skirting, sink, veneering, sills, steps, etc. where machine polishing after the stones are fixed in situ is not possible shall be double polished.

5.0 WORKMANSHIP

5.1 Granite stone of approved quality shall be laid evenly to level and slope as directed by Engineer in charge over a bed of a base layer consisting of cement mortar 1:3 (1 cement: 3 coarse sand by volume)

5.2. Cement and sand for base layer shall be mixed in proportions of 1:3 (1 cement : 3 coarse sand by volume) Cement and sand shall be proportioned by volume after making due allowance for bulking. The require quantity of water shall then be added and the mortar mixed to produce workable consistency before mixing platform shall be thoroughly cleaned before changing from one type of cement to another.

5.3. The mixing for base layer shall be done intimately, The operation shall be carried out on clean water tight platform, and cement sand shall be first mixed dry in the required proportion to obtain



uniform colour and then the mortar shall be mixed for at least two minutes after addition of water. In case of cement mortar, that has suffered because of evaporation of water the same shall be re-tempered by adding water as frequently as needed to restore the requisite consistency but its re-tempering shall be permitted only within thirty minute from the time of addition to water at the time of initial mixing.

5.4. Cement and sand for base layer shall be mixed in proportion as specified in the item, Cement and sand shall be proportioned by volume after making due allowance for bulking. The required quantity of water shall then be added and the mortar mixed to produce workable consistency.

5.5. Curing shall be started as soon as the mortar used for finished has hardened sufficiently no to be damaged when watered. It shall be kept wet for a period of at least 7 days. During this period, it shall be suitably protected from all damages;

5.6. During hot weather, all finished or partly finished work shall be covered or wetted in such manner as will prevent rapid drying of the flooring work.

5.7. Joints of flooring shall be through and continuous throughout the building as directed by Engineer in charge

5.8. joints shall be filled with a stiff mixture of gray cement surly

5.9. The flooring work shall be finished by rubbing and mirror polishing after the the work of flooring is set properly

6.0 PROPORTION OF MIX

6.1. The proportion of cement and sand for base layer shall be one part of cement. Three parts of sand and shall be measured by volume.

7.0 MODE OF MEASUREMENT & PAYMENT :

7.1. The unit rate shall include the cost of all materials, tools and plant required for mixing, laying of base layer in true level and slope as required applying & placing stones in position, compacting, finishing, curing mirror polishing,

The rate of plastering shall include the cost of all labour, materials tools and plant scaffolding and all incidental expenses as described herein above.

7.2. The plaster work shall be measured for its length and width, limiting dimensions to those specified on plan or as directed. **The rate shall be for a unit of one square meter.**

Item No. 28 :

Providing Material and Labour and applying fibre reinforced elastomeric liquid water proofing membrane with resilient acrylic polymers having Sun Reflectivity Index (SRI) of 105 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, Before starting treatment all crack need to fill in bare slab and it should be dust free, after treatment pond testing is must for 3-4 days should be The work shall be carried out all complete as per specification and the direction of the engineer-in-charge. The product performance shall carry guarantee for 10 years against any leakage.complete in all respect as per the direction of Engineer-in-Charge etc. complete.

(Make - Fosroc,Laticrete, Basf, Sika)

The rate includes cost of all materials and labour required to complete the item

The rate shall be for a unit one sq. meter.

The payment will be made on Square Meter basis of the finished work.

Item No. 29 :

Providing material and labour for 10mm thick cement plaster in single coat on Slab ceiling surface for plastering finished level and smooth including curing, scaffolding etc. complete in C:M (1cement : 3 fine sand) and finished with floating coat of neat cement slurry as directions of Engineer-in-charge Complete.

The item shall be executed as per the relevant specifications of General Technical specifications for Building works Booklet It. No. 17.58(i) / P.119/17.69 P.121

The rate shall be for a unit one sq. meter.

The payment will be made on Square Meter basis of the finished work.

Item No. 30 :

Providing material and labour for 15mm thick cement plaster in single coat on brick concrete wall surface for plastering finished even and smooth including curing scaffolding etc. complete in C:M 1:4 (1cement : 4 fine sand) and finished with floating coat of neat cement slurry also Fixing of GI mesh at all Horizontal & Vertical junction of RCC Column/ beam & Brick work as directions of Engineer-in-charge.

The item shall be executed as per the relevant specifications of General Technical specifications for Building works Booklet It. No. 17.58(ii) / P.119 /17.69 P.121/17.59

But Plaster thickness is 15mm.

The payment will be made on Square Meter basis of the finished work.

Item No. 31 :



Providing material and labour for 20 mm thick double coat mala cement plaster on exterior / interior, brick / concrete work for plastering comprising of base coat of 12mm thick cement plaster in cement mortar (1-Cement : 4-Coarse sand) in rough finishing and 8 mm thick top coat of cement mortar 1:2 (1-Cement : 2-Coarse sand) finished with trowel including scaffolding curing etc. complete.

The item shall be executed as per the relevant specifications of General Technical specifications for Building works Booklet It. No. 17.95 / P.122/17.94

The rate shall be for a unit one sq. meter.

The payment will be made on Square Meter basis of the finished work.

Item No. 32 :

Providing material and labor for 20 mm thick rough finished (Sand Face) cement plaster on walls up to any height consisting of 12mm thick backing coat of CM 1:3 (1-cement : 3-sand) and 8mm thick rough finishing coat of CM 1:1 (1-cement : 1-sand) on exterior brick / concrete work for receiving texture paint's base coat etc. complete. For plastering below & above plinth up to all Floor complete. as directions of Engineer in charge Complete.

The item shall be executed as per the relevant specifications of General Technical specifications for Building works Booklet It. No. 17.61 / P.120/17.59

The rate shall be for a unit one sq. meter.

The payment will be made on square Meter basis of the finished work.

Item No. 33 :

Providing material & labour for Ceiling painting (two coats) with plastic Emulsion paint of approved brand and manufacture on un decorated Ceiling surface to give an even shade including With applying Two coats of wall care Putty & two coat of primer thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth. as directed by engineer in charge complete.(All Floor) Make: Asian Paint, Dulux, Nerolac, Berger Jotun or equivalent./ Wall Care Putty Birla White.Asian Paints, JK,Berger paint, Nerolac or equivalent

The item shall be executed as per the relevant specification of General Technical Specification for Building works Booklet It. No. 18.57 Page No 136 + 18.60 Page 137 +18.59 P. 137.

The rate shall be for a unit one sq. meter.

The payment will be made on square Meter basis of the finished work.

Item No. 34 :



Providing material & labour for Wall painting (two coats) with plastic Emulsion paint of approved brand and manufacture on un decorated wall surface to give an even shade including With applying Two coats of wall care Putty & two coat of primer thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth. as directed by engineer in charge complete.(All Floor) Make: Asian Paint, Dulux, Nerolac, Berger Jotun or equivalent./ Wall Care Putty Birla White.Asian Paints, JK,Berger paint, Nerolac or equivalent

The item shall be executed as per the relevant specification of General Technical Specification for Building works Booklet It. No. 18.57 Page No 136/+18.59+18.60 Page 137

The rate shall be for a unit one sq. meter.

The payment will be made on square Meter basis of the finished work.

Item No. 35 :

Painting two coats (excluding Priming coat) on new steel and other metal surface with enamel paint, brushing, interior to give an even shade including cleaning the surface an even shade including cleaning the surface of all dirt, dust and other foreign matter. Rate shall be inclusive of the cost of scaffolding Complete as per Directed by Engineer In charge.

The item shall be executed as per the relevant specification of General Technical Specification for Building works Booklet It. No. M-44/44.1.1 Page No-21

The rate shall be for a unit one sq. meter.

The payment will be made on square Meter basis of the finished work.

Item No. 36 :

Metal Paint: Providing and applying two coats of abduct cured modified **epoxy marine paint** of 150 micron each and 50 micron top coat of acrylic pu finish. Including surface preparation by dry abrasive blasting of 45 to 60 microns with cleaning and removal of all dirt, grease, varnish, paint or any other foreign matter, including thinner and all accessories. Sample to be approved before starting of the work by Architect/ EIC. Rate shall be inclusive of the cost of scaffolding. (Brands: Jotun)

The rate shall be for a unit one sq. meter.

The payment will be made on square Meter basis of the finished work.

Item No. 37 :

Demolition of Brick work and stone masonry including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift.(ii) In Cement Mortar.

The Item shall be executed as per the relevant specifications of general technical specification for building work booklet Item No.20.11(iii) / Page No.148



The Item shall be measured & paid as finished work in Cum.

Item No. 38 :

Removing and scraping of old deteriorated plaster of any thickness from wall / R.C.C member including stacking of serviceable material and disposal of unserviceable from site of work with all lead and lift.

The rate shall be for a unit one sq. meter.

The payment will be made on square Meter basis of the finished work.

Item No. 39 :

Providing & fixing of Glass Cover Display Cabinet Box making from 18mm th Plywood & Laminate finish with MS Pipe Black Powder coated Framing As per Drawing . The base of cabinet is making From 25mm thick plywood with 1mm thk Laminate Finish & above Base Display Box made from 18mm plywood With Laminate on all external side. & Periphery of Box covered with 18mm MS Pipe Frame with Black Powder coating & Cladding with 12mm Toughned Glass and fixed with transparent silicon sealant fixing to frame as per detail drawing . including required Hardware etc Complete as shown in Drawing or as per directed by engg in charge. (MS Frame Size 600mm x 450mm x1300mm Ht & Middle Wooden Base Box Size 300mm x450mm x 900mm ht)

The payment will be made on **Per Nos basis** of the Complete finished work.

Item No. 40 :

Providing and supplying & fixing of Open Display Rack size of 2200mm x 300 mm x2140 mm ht which should support angles 25 x25 x 4mm Legs and should be provided Middle Support Frame and painted finish for long time usage. Further,it should be MS powder coated finish which can provide for optimum corrosion resistance.It should be steady enough to keep bulky stuff easily up to 60kg to 75 kg per shelf capacity. It should include 18mm thk Plywood With Both side Laminated self with an Fixed arrangement,should have greater depth support,and should be completely flexible to use,heavy-duty structural steel section, and others. Offered angle racks should be designed utilizing the finest quality of material and sophisticated technology in compliance with set standards of the industry. As approved by Architect. (Including transportation, loading, unloading and erecting/installation/placing of item at site as directed by Engineer in charge.) Size: 2200mm x 300mm x 2140mm Complete as per Drawing.

The payment will be made on **Per Nos basis** of the Complete finished work.

Item No. 41 :



Providing and supplying & fixing of Decorative Open Display unit size of 2550mm x 300 mm x 2140 mm ht Display unit Made From 18mm Plywood box with all exposed Side Finish with 1mm Laminate. Wooden box Size & shape as per drawing Various size of Box) should Fixed in 25x25mm x 1.2mm MS Powder Coated Framing Legs and Middle Support Frame painted with Epoxy Paint for long time usage. Unit with Fixed arrangement, should have greater depth support, and should be completely flexible to use, heavy-duty structural steel section, and others. MS Member should be designed utilizing the finest quality of material and sophisticated technology in compliance with set standards of the industry. As approved by Architect. (Including transportation, loading, unloading and erecting/installation/placing of item at site as directed by Engineer in charge.) Size: 2550mm x 300mm x 2140mm Complete as per Drawing.

The payment will be made on **Per Nos basis** of the Complete finished work.

Item No. 42 :

Providing and Supplying of **An Artist horse (Donkey) Bench** (Foldable) with Drawing Board constructed from 25mm thk solid teak wood Planks Finished in Melamine or Natural Polish as per Directed. all members like Seat, Front portions are Making with 25mm Solid Teak wood & Teak wood Legs as per Drawing (size of Bench 36" x 12" x 32" Ht) Length 36" x Seat Height 17" x seat width 12" & board Front height 32" as per drawing. Rate also including of Drawing Board (Size 16" x 23") Made from finest quality natural seasoned pinewood making it the best drawing surface to own. & Strong natural pinewood battens at the back to avoid any kind of warping and provide extra support to the board. Battens help in easy transportation of the board as well. Also provide Folding Mechanize with Required Hardware, Hinges, support frame etc. Designed & making with easy portability, with folding or collapsible features, making it convenient for artists who need to move their workspace or attend outdoor painting sessions. Complete as per Drawing or as per directed by Engineer -in-Charge.

The payment will be made on **Per Nos basis** of the Complete finished work.

Part - B- Fire Fighting Work



GENERAL SPECIFICATIONS

- 1.0 Fire Extinguisher:** The scope of work under this part of the specification covers supply and installation of internal appliances as per requirements specified in schedule & marked on drawings and instructions of engineer-in-charge.

Makes of all the appliances supplied and installed shall be as per the 'List of Approved Make' or as approved by LFA and shall be of identical design for the entire premises. Mounting accessories, indicator boards etc. are part of the scope of supply of internal appliances.

1.1 Specifications:

Internal appliances with various fire extinguishing medium shall conform to the following specifications and shall be installed and maintained as per IS: 2190 / NFPA 10

Portable Extinguishers of the following types shall be installed according to local CFO requirement.

1. CO₂ type
2. ABC type

- 1.1.1 CO₂ Type:** The CO₂ Extinguisher shall be ISI mark, with initial charge with high pressure cylinder, complete with wheel type valve, internal discharge tube, with high pressure discharge hose with horn and suspension brackets. The extinguisher shall have ISI mark of 2878 or latest Indian standard and capacity shall be 2 Kgs.

- 1.1.2 ABC (Powder) Type :** 6 Kg ABC (Powder) type fire extinguisher shall conform to IS 15683 or latest Indian Standard & will be with all accessories & mounting arrangement

2.0 Pipe Work :

- 2.0.1** All the materials shall be of TAC/LFA approved, best quality conforming to the specifications and subject to the approval of the Client or his representative. If so directed, materials shall be tested in an approved testing laboratory & the contractor shall produce the test certificate in original to the Engineer-in-charge & the entire charges for original as well as repeated tests shall be borne by the Contractor.

- 2.0.2** Before welding, the pipe faces shall be cleared & then shall be welded conforming to IS : 9595 – 1980. The electrodes used for welding shall comply with IS:814. the laying of welded pipe shall also comply to IS 5822 – 1986. The welding joints shall be tested in accordance to IS:3600, Part 1973.

- 2.0.3** Pipes and fittings shall be fixed truly vertical, horizontal or in slopes as required in a neat workman like manner.

- 2.0.4** Pipes shall be fixed in a manner as to provide easy accessibility for repair and maintenance and shall not cause obstruction in shafts, passages etc.

- 2.0.5** Pipes shall be securely fixed to walls, and ceilings by suitable clamps or supported at every 3 mtr. & at change of direction as required. Only approved type of anchor fastners shall be used for RCC ceiling and walls.

- 2.0.6** Valve and other appurtenances shall be so located that they are easily accessible for operations, repairs and maintenance.

2.1 Pipes : Pipes of the following types are to be used:

- 2.1.1** MS/ G.I. pipes as per IS: 1239, heavy duty (for pipes of sizes 150 mm N.B. and below) suitably lagged on the outside to prevent soil corrosion. M.S. pipes buried below ground shall be lagged as per IS: 10211.

- 2.1.2** MS/GI pipe lines upto 150 mm dia. shall have all fittings as per IS: 1239, Part-II (heavy grade) while pipelines above 150 mm dia shall be fabricated from IS: 3589 Gr.320 pipes as applicable or from steel plates.



- 2.1.3 For MS/GI pipelines upto 50 mm dia screwed jointing shall be adopted, while for pipelines above 50 mm dia welded or flanged construction is to be carried out or as specified in Schedule of quantities.
- 2.1.4 Hangers and supports shall be capable of carrying the sum of all concurrently acting loads. They shall be designed to provide the required supporting effects and allow pipeline movements as necessary. All guides, anchor, braces, dampener, expansion joint and structural steel to be attached to the building structure trenches etc. shall be provided. Hangers and components for all piping shall be approved by the Consultant / Client / Architect.
- 2.1.5 The piping system shall be capable of withstanding 150% of the working pressure including water hammer effects.
- 2.1.6 Flanged joints shall be used for connections to vessels, equipment, flanged valves and also on suitable straight lengths of pipeline of strategic points (@ at every 15-20 mtr.) to facilitate erection and subsequent maintenance work.
- 2.1.7 Excavation for pipe line shall be in open trenches. Pipes shall be buried atleast one meter below ground level and shall have 230 mm x 230 mm masonry supports atleast 300mm high at 3m intervals. Masonry work to have plain cement concrete foundation (1 cement: 4 coarse sand: 8 stone aggregate) of size 380 x 380 x 75 thick resting on firm soil.
- 2.1.8 Wherever required Contractor shall support all trenches or adjoining structures with adequate supports to prevent landslides.
- 2.1.9 On completion of testing and painting trenches shall be refilled with excavated earth in 15 cm layers and compacted.
- 2.1.10 Contractor shall dispose off all surplus earth within the site.
- 2.1.11 Contractor shall provide suitable cement concrete anchor blocks for overcoming pressure trusts in underground / external pipes. Anchor blocks shall be of cement concrete 1:2:4 mix.

3.0 Valves

- 3.1 Valves shall be used to start, stop or control flow. Non-return valves shall be provided unidirectional flow.
- 3.2 Butterfly valve conforming to BS 5155 or as indicated in BOQ will be used for isolation of flow in pipelines. Optionally, gate valves having outside screw rising spindle shall be used and shall be as per IS: 780 / 14846 PN 1.0/1.6, as applicable. For sizes 50mm to 200mm, Butterfly valve shall be as per IS: PN = 1.6 or as specified in Schedule of quantities. Non-return valves shall be swing check/spring operated type. An arrow mark in the direction of flow shall be marked on the body of the valve. These valves shall conform to IS:5312 for swing type or API 596/598 for spring type check valves
- 3.3 Valves below 50 mm size shall have screwed ends while those of 50 mm and higher sizes shall have flanged connections. Drain lines will have locks for draining.

4.0 Internal Hydrant:

Internal hydrant shall be provided at each landing or at suitable location consisting of single / twin headed gunmetal/SS landing valve as indicated in BOQ with 63 mm dia oblique female instantaneous pattern with caps & chains. Outlet and 80 mm inlet (IS: 5290-1969) with separate shut off valve. Landing valves shall be 63 mm dia. Oblique female instantaneous pattern with caps and chains. Landing valves shall be of gunmetal and fitted with instantaneous coupling conforming to IS: 901. The valve body, stop valve, check valve, nut, instantaneous female outlet and blank cap shall be of leaded-tin bronze conforming to Grade-II of IS: 318-1962. The valve spindle shall be of brass rod conforming IS: 320 - 1962. The hand wheel shall be mild steel or cast iron washers gaskets shall be of rubber conforming to IS:638 - 1965 or leather conforming to IS: 581 : 1969. The coupling shall be fitted with an internal plug secured by chain landing valves shall be installed on hydrant riser at a height of 1.0 to 1.2 meter from the floor level.



Each internal hydrant shall be provided with two nos. 63 mm. Diameter 15 mtr. Long hose pipe with gunmetal male and female instantaneous type coupling, machined wound with G.I. wire hose of IS 636 type A and couplings to IS:903 with IS certification, gunmetal branch pipe with nozzle conforming to IS:903. Minimum Pressure of 3.5Kg/Cm² to be maintained at each outlet by installing pressure pumps, if required.

5.0 Hoses

Hoses pipes shall be of fabric reinforced rubber lines as per IS:636 Type II or canvas hose as per IS:4927, with nominal size of 63 mm and lengths of 15 meter or 7.5 meter, as per quantities specified for in schedule or bill of quantity.

All hose pipes shall carry ISI marking on the body of the hose.

The hose shall have instantaneous spring lock-type coupling on ends. The instantaneous coupling shall be as per IS: 901. It shall be fixed to each other by copper rivets and galvanized M.S. wires and leather bands. All coupling shall be interchangeable with each other and shall bear ISI markings.

6.0 Hose Cabinets (Hose Box)

Each hydrant shall be housed in a Hose cabinet of suitable size. The hydrant cabinet shall hold double / single headed hydrant as specified, 2 hoses and one branch pipe as required. Internal hydrants shall normally fit the size of the niche made for it. The cabinet shall be of minimum 16 SWG M.S. sheet with centre opening, double glass front doors (cleat glass of 4mm thickness). The glass shall be firmly fixed by means of steel clips and screw with rubber beading. Hinges shall also be screwed and not welded. The corner members (frame) shall be of 25 x 25 x 3 mm thick angle. The hose box shall be firmly fixed to the wall/support by means of brackets and dash fasteners. The steel work shall have one coat of primer and two coats of red paint. The words "Yard Hydrant", "Hydrant" etc. should be painted in white or red on the glass in 75 mm high letters. The hose box shall be lockable for internal hydrant installation.

7.0 Hose Reel

The hose reel shall be directly tapped from the riser through a 25 / 32 mm dia pipe, the drum and the reel being firmly held against the wall by use of dash fasteners. The hose reel shall be swinging type (180degrees) and the entire drum, reel etc. shall be as per IS: 3876 and IS: 884. The rubber tubing shall be of best quality and the nozzle shall be shut off type.

8.0 Branch Pipes

Branch pipe shall be of either gun metal or aluminium and should conform to IS: 903. One end of the branch pipe will receive the coupling while the other end shall have a nozzle screwed to it. It shall bear ISI marking.

9.0 Manual Call Points shall be installed at each Exit Staircase, Lobby areas on each floor to comply with relevant standard / norms or recommendation of local fire brigade authority.

Manual Call Points (MCP): The Manual call points (MCP) shall conform to the relevant standards having the following features.

1. MCP shall be resettable Type.
2. MCP shall be either surface mounted or flush mounted.
3. The MCP shall have a LED to indicate Alarms
4. The MCP ABS type and red in colour.

Conventional Sounder: The Sounder shall conform to the relevant standards having the following features.



1. The Sounder shall be a Conventional sounder. (Bidder shall consider external power supply - Sounders)
2. The sounder shall have an audibility level of 85dB
3. The sounder shall have the capability of being tested from the FACP.
4. The sounder ABS type and red in colour.

Manual Call Point The Manual Call Point shall be Conventional type to define the location.

1. It shall operate on 24 Volts DC.
2. It shall be red in colour ABS Plastic.
3. The Manual Call Point shall be with a Resettable type front glass.
4. The switch rating shall be for minimum 1 amp.
5. There shall be a 5 mm RED LED to glow if the Call Button is activated.
6. The cable termination in the call button shall be with 6A rated terminals.
7. It shall be compatible with all type of conventional panel. Sounder: The Sounder shall be Conventional type:
8. It shall operate on 24 Volts DC.
9. It shall be red in colour ABS Plastic.
10. The Sounder shall be tested at site for continuous operation of 15 minutes.
11. The sounders shall be conventional and wired in a separate NAC.
12. Operating Current: 40mA
13. Sound Level: 85dB@1m
14. Operating Temperature: 0 - 49° C / 32-120° F.
15. Sounder Type: Piezo Electric Type
16. Tone Type: Fire Engine Siren.

10.0 Start-up / System Testing

It will be the responsibility of the tenderer to cause interim / stage inspection by the Local Fire Authority LFA / Chief Fire Officer C.F.O during execution of the work as and when so called for by the Employer / Consultant and shall carry out any rectification / modification as may be suggested by the Local Fire Authority (LFA), Chief Fire Officer (CFO).

Soon after the work is completed, the contractor shall inform the LFA/CFO in writing with a copy to the Consultant / Employer for getting the complete system including all sub system and instrumentation, control etc. thoroughly inspected and tested for satisfactory performance. After satisfactory completion of tests of the systems by the LFA / CFO, the contractor shall be required to submit as built drawings to the Consultant / GHB which have been so approved.

11.0 Commissioning of System

Check each landing valve, male and female couplings and branch pipes for compatibility with each other. Any fitting which is found to be incompatible and does not fit into the other properly, shall be replaced by the Contractor. Landing valves shall also be checked by opening and closing under pressure.

12.0 Handing Over

- 12.1 All commissioning and testing shall be done by the Contractor to the complete satisfaction of the Engineer-in-Charge / Consultants, and the job handed over to the Client.
- 12.2 Contractor shall also hand over to the Client all maintenance and operation manuals and all items as per the terms of the contract.

**Item No. 43 :**

Supplying, installation testing and commissioning of the following '**C**' class **MS Pipe** as per IS : 1239-1973 tested to 200 PSI complete with fitting & welding of pipes & fittings wherever required complete with flanges & painting , with all the engineered support as per detail technical specification, underground/overground pipes with welded / flange connection with saddles, supports (all with screwed/welded joints) as required including pipe of shorter lengths, tapering connecting pieces, short or long bends, specials like sockets, union nuts, elbows, reducers, plugs, Tees etc. complete to make the system operative as required by LFA authorities the pipes will have to be laid and fixed in trenches. The work includes excavation in all types of soils and back filling, dewatering, etc., making holes in brick or RCC walls, slabs/ roofs and making good the damages by bringing to the original condition to the satisfaction of the Architect and painting two coats of approved shade(Post office red)of enamel paint over a coat of approved primer for over heads pipes and providing and fixing pypkote (corrosion protection tape) including supply and application of pipe coating and spiral Wrapping for underground piping (complete as per ASTM standards/IS:10221 for corrosion protection of pipes for the under ground installation. Note : The piping installation has to be put to hydraulic test to1.5 times the working pressure & as per latest applicable codes & standard before applying paint or pipe coating or wrapping etc. complete. aping should have overlap of 15 to 20 mm) etc. **50mm dia Pipe**

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No. 44 :

Same as Above 80mm dia Pipe

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No. 45 :

Same as Above 100mm dia Pipe

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No. 46 :

Same as Above 150mm dia Pipe

The payment will be made on **Per Running Meter basis** of the Complete finished work.

**Item No. 47 :**

Providing Supplying and fixing 80 mm dia cast iron butterfly valve complete with epoxy coated disc, carbon steel shaft and lever actuator including flanges and nut bolts etc complete as per I.S 13095 of PN16 rating. for isolation

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

Item No. 48 :

Providing and fixing **100 mm** dia cast iron butterfly valve complete with epoxy coated disc, carbon steel shaft and lever actuator including flanges and nut bolts etc complete as per I.S 13095 of PN16 rating. for isolation.

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

Item No. 49 :

Providing Supplying and fixing 150 mm dia cast iron butterfly valve complete with epoxy coated disc, carbon steel shaft and lever actuator including flanges and nut bolts etc complete as per I.S 13095 of PN16 rating. for isolation

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

Item No. 50 :

Providing Supplying and fixing **hydrant stand posts of 80 mm** dia. With flanges and accessories and supply, fixing single headed 63 mm dia G.M. Hydrant Valve in the courtyard IS:5290 Including 2 coats of approved enamel paint (red) over a coat of primer, complete with 2.1/2" 'Morris pattern instantaneous couplings, etc. complete. yard hydrant 63 mm

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

Item No. 51 :

Providing and fixing approved fire hose cabinet size 600x 750x 250mm to house fire hydrant & hose, including all other related accessories fabricated from M.S. sheet (14 Gauge) of fully welded construction having front door with locking arrangement, partially glazed with 4 mm thick glass. Cabinet shall be powder coated & painted with post office red colour of size as mentioned in drawing (or as approved by the Architect) to house 15 mt.x2 No. hoses, Hose Cabinet for External yard Hydrant

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

**Item No. 52 :**

Supplying and fixing first-aid 40 meter long Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required. 20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585. 20 mm nominal internal dia gun metal globe valve & nozzle. Drum and brackets for fixing the equipment on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

Item No. 53 :

Providing & fixing 63mm dia RRL hose pipe as per IS 636 TYPE A LFA approved of 15 mt. x 2 No. standard length of approved pattern and size including gun metal male and female Coupling duly bound with copper wire etc. Complete 63 mm RRL Hose 15mtr.x 2 No.

The payment will be made on **Per Set basis** of the Complete finished work.

Item No. 54 :

Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required as per approved make

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

Item No. 55 :

Supplying and fixing 4 way Fire Brigade service inlet of size 150 mm dia. with 4 No. 63mm (2.1/2") size GM male outlets (bronze male coupling) including metallic cover of mild steel and glass front, indicator plates,150mm BFV, NRV, etc. Complete

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

Item No. 56 :

Supplying and fixing 2 way Fire Brigade service inlet of size 100 mm dia. with 2 No. 63mm (2.1/2") size GM male outlets (bronze male coupling) including metallic cover of mild steel and glass front, indicator plates,100mm BFV, NRV, etc. Complete

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

Item No. 57 :



supplying & installing completely testing & commissioning of centrifugal Multistage type main fire pump(electrical driven) for hydrant main / sprinkler main with cast iron casing & bronze impeller & internal parts, make as approved by ISO/CFO for fire duty, complete with coupling, coupling guard necessary base frame, foundation bolts, RCC foundation, anti vibration paid , capable of discharging 2850 lt/min against 145 mt. head against all losses complete. The scope shall also include electrical TEFC motor, operated on 3-ph, 440-V, 50 Hz, 1500 RPM Syn. speed with 'B' class winding, make as approved by LFA. The pump shall be capable of giving not less than 150% discharge at a head not less than 65% of the rated head. Motor to be of continuous rating etc. complete. Each incomer and Outgoing feeder should be capable for protection against Overload, Short Circuit and Phase reversal condition and shall be capable to communicate with BMS . System should be capable to compensate for frictional losses at lower flows. All alarms should be displayed in the controller&BMS. System should be equipped with dry running protection. Indication of all type of faults / on-off status / electrical parameters shall be available on panel and central IBMS monitors. On-off operation for all pumps shall be available on BMS system. Pump - Motor : Discharge : 2850 LPM, Head 25 mt

The payment will be made on **Per Nos basis** of the Complete finished work.

Item No. 58 :

Supplying & installing completely testing & commissioning centrifugal multistage type main fire pump (diesel driven)with cast iron casing & bronze or phosphor bronze internal parts, make as approved by ISO/CFO for fire duty, complete with coupling, coupling guard necessary base frame, foundation bolts, RCC foundation,anti vibration paid , capable of discharging 2850 lt/min against 145 mt. head against all losses complete with suitable diesel engine of speed matching the pump speed ,auto start facility with battery & battery charger, necessary wiring, fuel tank ,exhaust system, foundation gauges & wired for automatic start of the water pump on drop of pressure in the hydrant and sprinkler system. The pump should confirm to LFA / SEB & and IE Regulations. The pump shall be capable of giving not less than 150% discharge at a head not less than 65% of the rated head.

Pumping System shall be capable to communicate with BMS . System should be capable to compensate for frictional losses at lower flows. All alarms should be displayed in the controller&BMS. Indication of on-off status parameters shall be available on panel and central IBMS monitors. On-off operation for all pumps shall be available on BMS system. Pump - Diesel Engine : Discharge : 2850 LPM, Head : 25 mt.

The payment will be made on **Per Nos basis** of the Complete finished work.

Item No. 59 :



Supplying, installing, testing and commissioning of Vertical Centrifugal Multistage type jockey pump-motor with discharge 180 lpm against 155 mt. head with 3 phase, 415 V, 50 Hz motor having 2900 RPM, complete with coupling, coupling guard necessary base frame, foundation bolts, RCC foundation, anti vibration pad, as per site conditions and instructions of site engineer-in-charge including proper fixing, The electrical motor for the pump should comply as per Specification. The scope shall also include necessary coupling, coupling guard, base frame, foundation bolts, RCC foundation, etc. complete. Each incomer and Outgoing feeder should be capable for protection against Overload, Short Circuit and Phase reversal condition and shall be capable to communicate with BMS. System should be capable to compensate for frictional losses at lower flows. All alarms should be displayed in the controller & BMS. System should be equipped with dry running protection. Indication of all type of faults / on-off status / electrical parameters shall be available on panel and central IBMS monitors. On-off operation for all pumps shall be available on BMS system. Pump - Motor : Discharge : 180 LPM, Head : **25 mt.**

The payment will be made on **Per Nos basis** of the Complete finished work.

Item No. 60 :

MCC for Fire Power Panel : Design, manufacture, supply, installation, testing and commissioning of following MCC panels suitable for 415V, 3 phase, 4 wire, 50 hz power distribution system. The panel should be indoor/outdoor, free standing, floor mounting, sheet metal clad, Cubicle, dead front, dust and vermin proof conforming to min IP-55 enclosure, compartmentalized design fabricated out of 14 SWG sheet steel complete with Al busbars, separate earth bus bar to be provided through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a modular multi tier arrangement, adequate size cable alley, painting, earthing numbering, damper plate etc. as required as per specifications and drawings. The panel shall withstand a required fault level as per SLD (Cost of PLC and related wiring for switching on and switching off the pumps as per the drawing & as per local CFO requirement) Each incomer and Outgoing feeder should be capable for protection against Overload, Short Circuit and Phase reversal condition and shall be capable to communicate with BMS. System should be capable to compensate for frictional losses at lower flows. All alarms should be displayed in the controller & BMS. System should be equipped with dry running protection. Indication of all type of faults / on-off status / electrical parameters shall be available on panel and central IBMS monitors. On-off operation for all pumps shall be available on BMS system. NOTE : Separate neutral link to be provided wherever TP MCCB are used. All MCCB shall have breaking capacity as per suitable fault level unless otherwise specified. Necessary cabling, wiring, earthing from panel to individual equipment shall be included in the quoted price. Following provisions to be made in the fire panel: Audio visual alarm and indications having disconnect/reset facilities with a



range of 1/2 Km. The indication shall come on when electrical driven pump set fails to start on pressure drop Facility for more selections i.e. auto or manual. Protection failure and control cabling. Interlocking with Diesel engine pump / D.G. set Local Push button (Start STOP) for fire equipment at each floor, if require, shall be provided as per drawing and as per direction of Local fire regulation The above requirement is general, in addition to that the vendor shall provide all the component/system/work for the proper operation of fire pumps as per fire rules & regulations and as per local CFO's requirement

Supply, installation, assembly, connection, testing and commissioning of Fire power panel as per Drawing, Remote On OFF switch operation as per Item no. 5.10.3, Specification, Technical Data sheet & IS. & Single Line Diagram.

The payment will be made on **Per Set basis** of the Complete finished work.

Item No. 61 :

Providing ,Supply ,installation , testing and commissioning of plate type / pipe type earthing station for various electrical equipment and systems as per Specification , IS : 3043 and standard drawing complete with following 38 mm. N.B., 3.0 MTR.. long G.I. Pipe (class B) type earthing station

The payment will be made on **Per Nos basis** of the Complete finished work.

Item No. 62 :

Providing ,Supply & installation of 25 x 6 G.I Strips

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No. 63 :

Supply, laying testing and commissioning of L.T. XLPE armoured / unarmoured cable conforming to IS : 7098 Part - II with cable end termination as per the description : 3 C x 120 Sq. MM. Al. XLPE ARM Cable

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No.64 :

Supply, laying testing and commissioning of L.T. XLPE armoured / unarmoured cable conforming to IS : 7098 Part - II with cable end termination as per the description : 3 C x 6 Sq. MM. Cu. XLPE Aarmoured Cable

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No. 65 :



Supply, laying testing and commissioning of L.T. XLPE armoured / unarmoured cable conforming to IS : 7098 Part - II with cable end termination as per the description : 5 C x 2.5 Sq. MM. Cu.PVC Armoured Cable (Control Cable)

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No. 66 :

Supply, fixing, connection, testing and commissioning of double compression brass cable glands and crimping type lugs / sockets with necessary tools and equipment as specified in specifications and IS. The glands and lugs / sockets shall be suitable for cable size and type mentioned above. The job also includes, if necessary, supply and fixing of extension busbar of same material on circuit breaker / FSU or panel board terminal / connector to connect more than one no. of parallel cables or to connect higher size cable to lower size unit. The job also includes earthing the glands and armour of the cable with common earth bar or flexible copper mesh.3 C x 120 Sq. MM. Al. XLPE ARM Cable

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

Item No. 67 :

Supply, fixing, connection, testing and commissioning of double compression brass cable glands and crimping type lugs / sockets with necessary tools and equipment as specified in specifications and IS. The glands and lugs / sockets shall be suitable for cable size and type mentioned above. The job also includes, if necessary, supply and fixing of extension busbar of same material on circuit breaker / FSU or panel board terminal / connector to connect more than one no. of parallel cables or to connect higher size cable to lower size unit. The job also includes earthing the glands and armour of the cable with common earth bar or flexible copper mesh.3 C x 6 Sq. MM. Cu. XLPE Aarmoured Cable

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

Item No. 68 :

Supply, fixing, connection, testing and commissioning of double compression brass cable glands and crimping type lugs / sockets with necessary tools and equipment as specified in specifications and IS. The glands and lugs / sockets shall be suitable for cable size and type mentioned above. The job also includes, if necessary, supply and fixing of extension busbar of same material on circuit breaker / FSU or panel board terminal / connector to connect more than one no. of parallel cables or to connect higher size cable to lower size unit. The job also includes earthing the glands and armour of the cable with common earth bar or flexible copper mesh.5 C x 2.5 Sq. MM. Cu.PVC Armoured Cable (Control Cable)

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

**Item No. 69 :**

Providing and fixing Power wiring with 12 core x 1.5 sq.mm. PVC armoured copper cable for wiring pressure switches, etc. Including all required material and labour, terminations, etc. Complete..

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No. 70 :

SITC of precharged MSEP air vessel (size 600mm dia x 1000 mm height) with adequate pressure switches with valves to operate as per operating sequence including 25 mm drain valve, air release valve with stop cock on top, 25 mm inlet with isolation valve & the vessel shall be painted inside & outside. The tank shall be fabricated from 8 mm thick MS plate with painting

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

Item No. 71 :

Supply, installation, of 100 mm dial Pressure gauge with Syphon tubing, isolation valve & mounting accessories complete Range : 0 - 10 kg/sq.cm.

The payment will be made on **Per Set basis** of the Complete finished work.

Item No. 72 :

Supply, installation, testing & commissioning of metallic SS 304 bellows on discharge side of pump conforming to EJMA with all hardware, Size : **150 mm** companion flanges & gaskets, etc.

The payment will be made on **Per Set basis** of the Complete finished work.

Item No. 73 :

Supply, installation, testing & commissioning of metallic SS 304 bellows on discharge side of pump conforming to EJMA with all hardware, Size : **100 mm** companion flanges & gaskets, etc.

The payment will be made on **Per Set basis** of the Complete finished work.

Item No. 74 :

Supply, installation, testing & commissioning of metallic SS 304 bellows on discharge side of pump conforming to EJMA with all hardware, Size : **50 mm** companion flanges & gaskets, etc.

The payment will be made on **Per Set basis** of the Complete finished work.

Item No. 75 :



Supply, installation, of 6 Kg ABC (Powder Type) Fire Extinguisher. In HP Mild Steel Cylinders ISI marked fitted with pressure indicating gauge, internal tube, squeeze lever type valve fully charged with ABC powder (Mono Ammonium Phosphate) pressured by Nitrogen complete in all respects including wall suspension bracket and conforming to IS:15683

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

Item No. 76 :

Supply, installation, of ISI marked (IS:15683) portable fire extinguisher, water (gas pressure) type capacity 9 liters with gun metal cap and nozzle and complete in all respects including initial fill and wall suspension brackets

The payment will be made on **Per Nos (Each) basis** of the Complete finished work.

Item No. 77 :

Supply, installation, of ISI Marked portable fire extinguisher, 4.5 kg CO2 type fire extinguishers complete in all respect including initial fill and wall suspension brackets & shall conform to IS 2878

The payment will be made on **Per Nos (Each) basis** of the Complete finished work

Item No. 78 :

ISI marked Fire Extinguisher, Dry Chemical powder type capacity 5 kgs conforming to IS : 2171 including first fill & wall suspension bracket.

The payment will be made on **Per Nos (Each) basis** of the Complete finished work

Item No. 79 :

Supplying and installing at approved location approved make fire buckets (3 nos./set) of 24 gauge galvanized steel sheet, standard 9 litre capacity and of round bottom shape, painted white inside and black on the bottom, inscribed with letters " FIRE" in black and gold with dry clean fire sand. The scope shall also include the stand for mounting the sand bucket.

The payment will be made on **Per Nos (Each) basis** of the Complete finished work

Item No. 80 :

Charges for Liasoning with CFO and getting all approvals and permissions & NOC 's required for fire fighting at various stages & after completion of the project.(All official and receipted payments would be submitted and Re-reimbursed)

The payment will be made on **Per Job basis** of the Complete finished work



Part – C- CCTV Work

Item No. 81 :

Supply, Installation, testing and commissioning of Cat6 Tool less Information outlet for Data & Voice. Cat6 U/UTP built in crimping mechanism with capability of re termination without refreshing the wires. LCS2 Tool less RJ45 Information outlet with insertion cycle (in & out) should be 2500 times (I/O) along with front side Label holder and transparent shutter. The Information Outlet connector shall be of gold/nickel, thickness of gold > 0.8 μm .3.3.10 The connectors shall be compliant with standards ISO/IEC 11801 Edition 2, CENELEC EN 50173-1 2007, ANSI/EIA/TIA 568-C.2, IEC series 60603-7 & also compatible as per IEEE 802.3af standard for PoE application.

Note: 1) Cost of cable termination in RJ45 jack shall claimed with the above item.

The payment will be made on **Per Nos basis** of the Complete finished work.

Item No. 82 :

Supply, Installation, testing and commissioning of 24 port Cat 6 19" Modular Patch Panel enable all possible combinations of the various types of cable (UTP, FTP, SFTP) mounted on the same panel by using various tool less connector blocks/modules. Have a metal structure enabling them to be durably fixed to the uprights of the 19" chassis and assuring automatic grounding between tool less RJ-45 connectors, the panel, and the 19" uprights of the enclosure. Include rear cable support with plastic cable guides to hold cable without need for cable ties. Include quick mounting system to mount the panel into the 19" rails without use of cage-nuts. Allow controlled access solutions to lock the empty ports of the panels (with a shutter) and to lock the patch cords in the ports. These may be used to secure the connections of WiFi access points, IP cameras, servers, or other critical devices.



The modular patch panel should also enable combinations of fiber optic cassettes, transceivers or Power over Ethernet injector modules to be mounted on the same panel by using tool less connector blocks/modules. Front Removal IO's option for maintenance and trouble shooting with 6 Different Colors Labels for Labeling & Identification of Individual Ports. Tested and guaranteed under dual circuit IEEE PoE+ up to 50W for up to 2500 on-load connections / disconnections.

Supply, installation, testing & commissioning of Wire/Cable manager suitable mounting on wall mounted/ floor mounted rack..

The payment will be made on **Per Nos basis** of the Complete finished work.

Item No. 83 :

Supply, Installation, testing and commissioning of Cat6 Tool less Information outlet for Data & Voice. Cat6 U/UTP built in crimping mechanism with capability of re termination without refreshing the wires. LCS2 Tool less RJ45 Information outlet with insertion cycle (in & out) should be 2500 times (I/O) along with front side Label holder and transparent shutter. The Information Outlet connector shall be of gold/nickel, thickness of gold > 0.8 μm .3.3.10 The connectors shall be compliant with standards ISO/IEC 11801 Edition 2, CENELEC EN 50173-1 2007, ANSI/EIA/TIA 568-C.2, IEC series 60603-7 & also compatible as per IEEE 802.3af standard for PoE application.

Note:1) Cost of cable termination in RJ45 jack shall claimed with the above item.

The payment will be made on **Per Nos basis** of the Complete finished work.

Item No. 84 :

Supply, installation, testing & commissioning of CAT6 UTP 24 AWG Patch Cord - 1 mtr with cross separator, Manufactured from stranded wires for longer flex-life, Conforming to the following standards like EN 50173, ISO/IEC 60603-7 & 11801/IEC 60332-1, UL VW-1

The payment will be made on **Per Nos basis** of the Complete finished work

Item No. 85 :

Supply, Installation, testing and commissioning of 19" slide-in drawers with galvanized steel accommodates up to 4 fiber optic units, 4 cables, accommodates up to 24 SC /LC connectors and 24 LC connectors. Should meet EN50173 and ISO/IEC 11801 operating specifications. (No SC connector required)

The payment will be made on **Per Nos basis** of the Complete finished work

Item No. 86 :



Supply, Installation, testing and commissioning of 19" slide-in drawers with galvanized steel accommodates up to 4 fiber optic units, 4 cables, accommodates up to 24 SC /LC connectors and 12 LC connectors. Should meet EN50173 and ISO/IEC 11801 operating specifications. (No SC connector required)

The payment will be made on **Per Nos basis** of the Complete finished work

Item No. 87 :

Supply, installation, testing & commissioning of Fiber optical cable 2 Meter LC-LC Patch Cord

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No. 88 :

Supply, laying and fixing of 6 core indoor/outdoor OS2 Armoured single mode Optical Fiber cable of size 50/125µm. outdoor rated with U/V stabilized sheath, Central Loose Tube Jelly filled construction, Permanent tensile strength minimum 500N, Maximum installation load 1500N, Impact resistance 20J, Crush resistance 3000N/100mm, Low Smoke Zero halogen jacket, fire rated for IEC 60332-1-2, IEC 60754-1, IEC 60754-2, IEC 61034-2 and confirming to ISO/IEC 11801 ed2:2002 (TIA/EIA 492AAAB) through existing GI/HDPE/ Hume pipe or on cable trays inside the cable duct including all necessary fixing accessories e.g. cable ties, hardware etc

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No. 89 :

Supply, laying and fixing of CAT - 6 UTP Cable 24AWG cross separator, Manufactured from stranded wires for longer flex-life

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No. 90 :

Supply, installation, testing & commissioning of 9U capacity wall mounted Cabinet / Rack with top bottom cable entry plates, ventilation grills at side complete with all mounting accessories , cable manager ,tray, ventilation fan, Power Manager & earthing strips - OUTDOOR Rack

The payment will be made on **Per Nos basis** of the Complete finished work

Item No. 91 :

Supply, installation, testing & commissioning of IO Box for camera (IO,Patch code,and Box with face plate)

The payment will be made on **Per Nos basis** of the Complete finished work

**Item No. 92 :**

Supply, Installation, Testing and Commissioning of 2MP IR Bullet Camera- CMOS 2.8 mm, horizontal FOV 112.1°, vertical FOV 60.0°, diagonal FOV 132.2° 4 mm, horizontal FOV 90.2°, vertical FOV 48.6°, diagonal FOV 107.6° Camera shall be suitable for outdoor application.

The payment will be made on **Per Nos basis** of the Complete finished work

Item No. 93 :

Supply, Installation, Testing and Commissioning of 2MP IR Dome Camera- CMOS 2.8 mm, horizontal FOV 112.1°, vertical FOV 60.0°, diagonal FOV 132.2° 4 mm, horizontal FOV 90.2°, vertical FOV 48.6°, diagonal FOV 107.6° Camera shall be suitable for Indoor application.

The payment will be made on **Per Nos basis** of the Complete finished work

Item No. 94 :

SITC of Layer 2 manageable networking switch, min. 8 # 10/100/1000 BT ports, all 8 ports supporting PoE+ as per IEEE 802.3a/t and having a total PoE budget of minimum 65 watts, minimum 2 dedicated SFP ports.

The payment will be made on **Per Nos basis** of the Complete finished work

Item No. 95 :

SITC of Layer 2 manageable networking switch, min. 16 # 10/100/1000 BT ports, all 16 ports supporting PoE+ as per IEEE 802.3a/t and having a total PoE budget of minimum 65 watts, minimum 2 dedicated SFP ports.

The payment will be made on **Per Nos basis** of the Complete finished work

Item No. 96 :

SITC of Layer 2 manageable networking switch, min. 24 # 10/100/1000 BT ports, all 24 ports supporting PoE+ as per IEEE 802.3a/t and having a total PoE budget of minimum 65 watts, minimum 2 dedicated SFP ports.

The payment will be made on **Per Nos basis** of the Complete finished work

Item No. 97 :

Supply, Installation, Testing and Commissioning of 64 Channel NVR with 4K Support and 2 HDD Slot, 16 IP Channel Inputs,

HDMI, 1/1 Audio I/O and 2/1 Alarm I/O, 12MP, 8MP, 5MP, 3MP, 2MP, 1080P, D1 & CIF Recording Resolution, 5 x 4k/16 x 3MP/24 x 1080P/54 x 720P/64 x D1 Decoding, 2 SATA HDD Support (10TB Capacity per Slot, Hard Disk Not Included), Save up to 50% on Storage with H.265, Adaptive Recording & Camera-wise Recording Retention, SMS & Email Notification/ Calling from Mobile



Application,512Mbps Throughput - 256 Uplink, 256 Downlink,Cascading: Built-in CMS to Monitor and Manage Multiple Matrix NVRs,ONVIF and Major Camera Brands Support,RAID0 & RAID1 Support
The payment will be made on **Per Nos basis** of the Complete finished work

Item No. 98 :

Supply, Installation, Testing and Commissioning of 14TB Hardisk.

The payment will be made on **Per Nos basis** of the Complete finished work

Item No. 99 :

Operator Terminals for viewing the cameras with licenses with monitors (32" LCD Displays). It is required that 18 camera shall be displayed on one monitor.

The payment will be made on **Per Nos basis** of the Complete finished work

Item No. 100 :

Supply, installation, testing & commissioning of HDMI Cable(20 Meter)

The payment will be made on **Per Nos basis** of the Complete finished work

Item No. 101 :

Supply, installation, testing & commissioning of 50 x 25 perforated Cable tray

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No. 102 :

Excavation for Soft soil For Trench work, Pole Foundation Etc Including Re Filling Complete as Directed.

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No. 103:

Supply, Installation, Testing and Commissioning of 25 mm PVC Conduit

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No. 104 :

Supply, Installation, Testing and Commissioning 63mm Dwc Pipe

The payment will be made on **Per Running Meter basis** of the Complete finished work.

Item No. 105 :

SITC of 3meter Pole for CCTV installation with IP 65 Camera Stand along with foundation.

The payment will be made on **Per Nos basis** of the Complete finished work

Item No. 106 :



Supply, installation, testing & commissioning of 100 x 100 mm junction box for camera installation.
The payment will be made on **Per Nos basis** of the Complete finished work