HINDUSTAN LATEX FAMILY PLANNING PROMOTION TRUST
B-14A, II Floor, Sector 62, Noida,
Gautam Budh Nagar, Uttar Pradesh - 201307

Request for Proposal (RFP)

Scope of work: Renovation and Alteration work of 3rd and 4th Floor allotted as District Early Intervention Centre {DEIC} at the Super Specialty Pediatric Hospital and Post Graduate Teaching Institute at Sector- 30 Noida, Gautam Buddh Nagar- 201 303.

Hindustan Latex Family Planning Promotion Trust (HLFPPT) is establishing and operationalizing a **Centre of Excellence (COE) District Early Intervention Centre (DEIC) and Training Centre in the state** with support from Ministry of Health & Family Welfare and Rashtriya Bal Swasthya Karyakram (RBSK) & NHM. Model DEIC would be established in Super Specialty Pediatric Hospital & Post Graduate Teaching Institute (SSPHPGTI), Sector-30, Noida. The objectives of the COE-DEIC is to deliver accessible health facilities with infrastructure and resource for interdisciplinary evaluation and intervention to be delivered under one roof. To provide early detection, intervention and referrals for all infants discharged from SNCU, children referred from RBSK, Mobile Health Teams, Delivery points, ASHA, Private medical practitioners and self-referral. To act as Regional COE for conducting training of other DEICs technical staff in the state of UP.

In this regard we are inviting sealed proposals for renovation and alteration work of 3rd & 4th floor allotted as District Early Intervention Centre (DEIC)

Detailed alteration and renovation work is enclosed in Technical Bid Format as Annexure-I

PleaseNote:-
1. Form must be completed in all respects, incomplete forms may liable to be rejected.
2. The form must be duly signed and sealed by the Authorised signatory
3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/Agency
Address:
Telephone/Fax

Terms and conditions
(To be enclosed with technical bid as per Annexure-I
& Annexure IV)

1. The agency can be an individual/HUF/Association of Persons (AOP)/Society/Trust/Partnership firm/company incorporated under the laws of India. The required documents related to constitution/incorporation of entity like partnership deed/trust deed/society by laws/memorandum and articles of association along with registration certificate of the entity should be enclosed.
2. No agency shall be entitled to submit more than one bid whether jointly or separately. If one does so, all bids wherein the agency has participated shall stand disqualified.
3. The agency should have an **average annual turnover of Rs.20 lakhs** in the **last three financial years** to be able to qualify for bidding.
4. The agency shall bear all costs associated with the preparation and submission of bid.
5. Proof of certificate for turnover is required to be submitted with the technical bid (CA certificate or a copy of the Audited Balance Sheet, Profit & Loss account of immediately last preceding three years).
6. The agency must have PAN (Permanent Account Number) & GSTIN No
7. Agencies should provide brief profile of their work experience.
8. HLFPPT reserves the right to accept /reject/ select one or more than one agency and to annul the bidding process any or all bids at any time prior to award of contract without thereby incurring any liability to the affected agency.
9. Evaluation of the bids will be done by competent committee from HLFPPT.
10. **Documents required to release the payment:**
    a. Bill / Invoice mentioning Permanent Account Number & GSTIN
    b. Documentary proof for completion of work.
    c. Crossed /cancelled cheque of Bank Account for making payment through NEFT/RTGS.

Please Note:-
1. Form must be completed in all respects, Incomplete forms may liable to be rejected.
2. The form must be duly signed and sealed by the Authorised signatory
3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

11. Agencies who will be technically qualified would only be considered for opening of financial bids.
12. Technical Evaluation of the agencies would be done on the following basis-
    - Past experience
    - Company Profile
    - Annual Turnover
    - Clientele.
    - Any other criteria as per discretion of Management.
13. The RFP shall be evaluated strictly based on the substantive information/credentials/documentary evidences submitted by the agencies.
14. The Financial Bids of agencies who do not technically qualify will not be opened and will not be considered in the final selection.
15. HLFPPT management reserves the right to award the work to more than one Agency as per requirement.
16. HLFPPT management reserves the right to place partial work order for alteration/renovation work to agency/ agencies.
17. The agency needs to submit 'Technical Bid' & 'Financial Bid' separately in sealed envelopes by super scribing as **'Technical Proposal for Alteration and Renovation of 3rd & 4th Floor at DEIC- Noida'** and **'Financial Proposal for Alteration and Renovation of 3rd & 4th Floor at DEIC - Noida.'**
18. Agencies shall use brand new equipments, sanitary wares, etc. to be installed in DEIC during alteration and renovation.
19. Agencies applying would be required to submit Rs. 20,000/- as Interest free Earnest Money Deposit (EMD) in the form of Demand Draft in favor of '**Hindustan Latex Family Planning Promotion Trust'** payable **at NOIDA**, **in the envelope containing Technical Bid.** If the selected agencies will not be able to complete the work on time, then the management reserves the right to forfeit the EMD. The EMD of the unsuccessful agencies would be returned within 30 days and no interest will be paid on the EMD.

Please Note:-
1. Form must be completed in all respects, Incomplete forms may liable to be rejected.
2. The form must be duly signed and sealed by the Authorised signatory
3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

20. All the bid needs to be submitted by **2:00 P.M. on Date- 6th November 2017 at** the following address:

Manager- Administration
Hindustan Latex Family Planning Promotion Trust (HLFPPT)
B-14A, II Floor,
Sector 62, Noida, Gautam Budh Nagar, Uttar Pradesh - 201307
Ph. 0120 – 4231060/61/62

21. **Pre-Bid Meeting** for any clarification or information would be held on **1st November, 2017 at 11 A.M.** above mentioned address.

22. Technical Bids would be opened on **6th November 2017 by 4:00 PM** at the same address.

23. The rates quoted by the agency will be inclusive of all Taxes/Levies/Packaging & Forwarding, Freight [FOR at Noida] etc.

24. The basic rate quoted by the agency will be valid for a period of 1 year from the date of award of purchase order as per details mentioned in Financial Bid document.

25. All the alteration and renovation work at DEIC Centre shall be completed within **30 - 45 days** from the date of issue of purchase order.

26. All the aspects of alteration and renovation as stipulated in the detailed technical bid with specifications schedule shall be the exclusive responsibility of the supplier. If the supplier fails to complete the work on or before the stipulated date, then penalty clause will be applicable as per discretion of HLFPPT Management team.

27. The supplier shall be required to perform the following services:-
    - **Refer Annexure I read with Annexure IV**

28. **Accessories & Consumables:** The separate price list of all accessories and consumables, if any, must be attached/ enclosed along with the Financial Bid.

Please Note:-
1. Form must be completed in all respects, Incomplete forms may liable to be rejected.
2. The form must be duly signed and sealed by the Authorised signatory
3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

29. **After Completion Service:** After completion service should be available on 24 (hrs.) X 7 (days) X 365 (days) basis. Complaints should be attended properly, maximum within 2 days to ensure timely correction wherever applicable, failing which the necessary penalty measures shall be enforced.

30. The firm shall not assign or sublet the work/job or any part of it to any other person or party. The tender is not transferable. Only one tender shall be submitted by one tenderer.

31. In case of breach of any terms and conditions as mentioned above, the Competent Authority, will have the right to cancel the work order/ job without assigning any reason thereof and nothing will be payable by HLFPPT, in that event the security deposit shall also stand forfeited.

32. HLFPPT reserves the right to award the purchase order to the second highest scoring agency in the event the first highest scoring agency backs out after final discussions. In such case HLFPPT reserves the right to forfeit the EMD of the concerned bidder. HLFPPT management reserves the right to take any other suitable decision if required in order to complete the task as per project timeline.

34. The agency needs to sign and stamp all pages of the technical bid along with the terms and conditions of RFP.

35. **Guarantee / Warranty Period:** The Agencies must provide for comprehensive warranty including all spares, accessories, fittings, sanitary wares, etc. used in alteration and renovation) from the date of satisfactory completion. The warranty charges shall not be quoted separately otherwise the offer shall be summarily rejected. Failure to comply this condition will entail the rejection of the bid. The price comparison shall be taken into account on basic price and post completion warranty.

36. The Agencies should also submit an undertaking **(Annexure-III)** duly signed & Stamped.

We agree and abide by all terms and conditions as mentioned above including the validity of the offer

Utmost confidentiality of the data provided shall be maintained.

Please Note:-
1. Form must be completed in all respects, Incomplete forms may liable to be rejected.
2. The form must be duly signed and sealed by the Authorised signatory
3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

Hindustan Latex Family Planning Promotion Trust
B-14A, II Floor, Sector 62, Noida,
Gautam Budh Nagar, Uttar Pradesh - 201307

Annexure-I: Technical Bid Format

	SPECIFICATION (TECHNICAL)	**AGENCY'S REPONSE (Agree or Disagree)**
1.	Name of the firm/ Society/ Company/ Proprietary Concern	
2.	Address of registered office (along with telephone number, if any)	
3.	Address of the office at Delhi/NCR (if any) (along with telephone number, if any)	
4.	Earnest Money Deposits (EMD) submitted	Yes Or No
5.	PAN No.	
6.	GSTIN No.	
7.	Agencies agree to provide services allied and incidental to the completion of alteration and renovation work.	Yes Or NO
8.	HLFPPT's authorized representatives may undertake activities such as measuring, examining, testing, gauzing one or more characteristics of the work done regarding alteration and renovation.	

Please Note:-
1. Form must be completed in all respects, Incomplete forms may liable to be rejected.
2. The form must be duly signed and sealed by the Authorised signatory
3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

Detailed List of Alteration and Renovation Work

S.No.	AREA	DESCRIPTIONS	UNIT	QTY
1.0	**DEMOLITION / DISMANTLING**			
1		Demolishing/ Dismantling of toilets block including brick work, plaster, wall tiles cladding, tiles flooring, skirting, False ceiling and removing switches and sockets etc. completely manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge and as per revised architectural planning.	Each	10.00
2		Dismantling doors, windows and clerestory windows (steel or wood) shutter including chowkhats, architrave, holdfasts etc. complete and stacking within 50 metres lead.	Each	60.00
3		Removal of Plumbing/ Sanitary fittings, fixtures and plug inlets. Keep all CP fittings and Fixtures in store as per direction of Architects		
a)		W/C with CP fittings	Each	30.00
b)		Bath Room CP fittings	Each	20.00
c)		Counter's Basin with CP fittings	Each	20.00
4		Debris removal altogether from site or as directed by Engg in charge for all levels, heights and leads complete.	per trip	10.00

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

2.0	CIVIL WORK			
1		Providing and Laying 25-50mm average thickness Plain Cement Concrete 1:2:4 (1 cement: 2 coarse sand: 4 aggregate, 20mm and down gauge), tamped, spaded, trowelled and smooth finish.	Sqmt	RO
2		Construction of Counter with Reinforced cement concrete in (M 20) 1:1½:3mix (1cement: 1½coarse sand: 3graded stone aggregate 20mm nominal size) including laying, curing, including the cost centering and shuttering and reinforcement complete as per design and drawings.	Cum	RO
3		Providing and Applying Water-proofing treatment to Pantry, Washroom surfaces exposed to damp / drainage / direct rainfall etc., consisting of 4 coats of Tapcrete to floors and vertical sides upto 600mm High from finish floor as under. Allow for necessary curing and drying time of Each coat, including surface preparation, cleaning the existing flooring, covering the waterproofing by plastering on top and bottom, providing proper bonding keys in the coats where required and necessary curing, (plan area to be measured for rates)	Sqmt	355.71
4		Providing and laying half brick partition wall with good quality bricks well burnt 1st class in cement mortar 1:4 (1 cement : 4 coarse sand) including providing 2 Each of 6mm dia MS round bars at every IV course including scaffolding, curing, raking out joints upto any height etc. complete as per direction of Site In-Charge or Architects.	Sqmt	239.59
5		Providing and laying 12-15 mm thick cement plaster of mix 1 : 4 (1 cement : 4 sand with 50% coarse sand & 50% fine sand) to all type of RCC / brick surface in line and plumb, upto all height, curing including scaffoldings, providing wiremesh at all junctions of walls and ceilings etc. complete.	Sqmt	479.19
6		Providing and applying 12 mm thick POP (Sakarni) punning on wall /ceiling including scrapping and hacking the existing finished surface and applying plaster of paris in proper line and levels including scaffolding etc. complete.	Sqmt	RO

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

3.0	**INTERIOR WORKS:**			
a)				
1		**SYNTHETIC CARPET:** Providing and fixing Synthetic Flotex Carpet with rubberised based approved make, colour and design complete in all respect including fixing of carpet. Rates include cost of adhesives, fixing, cutting and welding of carpet etc. as per drawing and specification and direction of the Engineer in Charge.	Sqmt	40.60
2		Providing and Laying 19mm thick. Granite stone of approved colour shade & size on RCC Toilet/ pantry/ Lab.as per drawing. Flooring pattern laid on 19mm thick cement mortar (1 cement: 4 course sand)and joined with neat cement slurry mixed with matching colour pigment to match the shade of granite including polishing complete in areas as specified in drawing.	Sqmt	RO
3		Providing & fixing double moulding Granite Counter in Lab/ Record over a BWR ply with areldite. Grouts to be matching the shade of granite including making holes for washbasin (over counter) including edge polishing and edge moulding as per Drawing and approved sample of moulding.	Sqmt	20.02
4		Providing and Fixing Ceramic tiles of approved colour and 300X300 size in flooring pattern as per drawing, over 20 mm thick cement mortar 1 : 4 (1 cement : 4 coarse sand) and jointed with white cement slurry admixed with matching pigment to match the shade of tile. & Grouting and spacer to be included.	Sqmt	196.70
5		Providing and Fixing Ceramic tiles of approved colour and size in wall cladding pattern as per drawing, over 12 mm thick cement mortar 1 : 3 (1 cement : 3 coarse sand) and jointed with white cement slurry admixed with matching pigment to match the shade of tile. & Grouting and spacer to be included.	Sqmt	153.31
6		Providing & Fixing 1.5 mm thk Vinyl flooring materials in Roll/ Tiles shall be confirming to IS 3462/86 approved make of ARMSTRONG /LG/ Wonder Floor including preparing the surface over the RCC / mojek / false floor with using suitable adhesive (Fevicol SR 505)approve shade as per the direction engineer in-charge	Sqmt	95.83

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

7		Providing and Laying Polished Vitrified Floor Tiles (600 X 600) in Different sizes (thickness to be specified by the manufacturer) with water absorption's less than 0.08% and conforming to IS 15622 of approved make in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement: 4 coarse sand) including grouting the joints with white cement and matching pigments etc. complete as per drawing and specification and direction of the Engineer in Charge. Make of (World / R.K).	Sqmt	RO
b)				
1		Supply & Installation of single glazed partition with a tested sound reduction property upto Rw 30dB single glazed partition with 10mm thick toughened glass. The panels are supported by natural anodized aluminium ground and ceiling profiles (AGGP) of 26x40mm (H) attached to the floor and suspended false ceiling. On the vertical edges the glass panels are wrapped around with 24x30mm Vertical profiles (AGVP). Certified proprietary factory finished Slim 'I' Profile is used for glass to glass joints. The glass to glass joints at the corners to have 90°corner Slim 90d profile and in the perpendicular glass junction T profile is to be used. Finishes of all aluminium frame components : Natural AEachdized Finished. Single Glazed Partition	Sqmt	RO
2		Providing and fixing toughened glass door shutters with Frame: The Door opening shall be formed by 92x40mm aluminium door frames in natural anodized finished. It should have Single leaf Shutter of 40mm. The width of Door Frame will be 70mm with provisions for inserting glass and the glass used in the system shall be 12mm toughened Glass with necessary acoustic gaskets. Hardware: Dorma. Includes door closer, door stopper, handles, deadlock etc. complete. All fittings to be checked in a mock up sample before starting of work.	Each	RO
3		Providing and fixing Dorma / ENOX Automatic Sliding door system with sensor, ES 200 Easy 4.15 mtr operator for Double Sliding Profile System for 12 mm Glass for Structural opening Width of 3000 mm with Clear Passage width 2100 mm, and Clear Passage height 2550 mm, with 2 Each Sliding & 2 Each Fixed Panels with Seals & Floor Mounted Guide complete with all accessories as per the design. Consisting of Operator Profiles, Mechanical Components, Electrical Components including glass, fitting etc. complete	Each	2.00
4		Providing and fixing white board of Alcon / White mark magnetic board with duster. size 4' X3'	Each	RO

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

c)				
1		**WALL ACOOUSTIC FABRIC:** Providing & fixing Fibrecrete Acoustic Panels –Natural Standard ND40 in size: 595 x 595 x 20mm one side burl screw fixed @ 200mm on GI metal/ Wooden/ MS frame of 50 x 50mm making a grid of 610 x 610mm c/c. The frame is to be made in proper line after leveling. The panels will be backed with 50mm polyester Wadding 1000 GSM inserted inside the grid of 610 x 610mm. Panels will be covered by non-woven carpet of choice color & pattern pasted both side with adhesive and roller without allowing air bubble to form. Joints of the carpet should be overlapped while pasting and then cut with sharp blade in perfect line so that the joint is barely visible	Sqmt	120.00
2		**CEILING ACOUSTIC:** Providing suspended ceiling with Fibrecrete Acoustic Tiles in size 595 x 595 x 15mm Natural Prime ND40 (White Colour). The tiles will be laid into the grid of size 600 x 600mm c/c of G.I pre coated (White) using Main T 34 x 24 & Cross T 24 x 24 & wall angles suspended suitably by dash fasteners, GI wire & suspension clip, butterfly & MS cleats. The entire framework should be in perfect level. The panels will be backed with 50mm polyester Wadding 1000 GSM inserted inside the grid of 610 x 610mm	Sqmt	45.00
3		**GYPSTEEL ULTRA STUD PARTITION:** Providing and fixing 98mm thick Gypsteel ULTRA stud partition which includes Single layer of tapered edge 13mm thick. Gyproc Duraline (conforming to EN 520:2004, Type D,F,I & R) is screw fixed with Gyproc Drywall, Screws of 25mm at minimum spacing of 300mm. at centre and 150mm at periphery of wall to either side of 70mm Gypsteel ULTRA C stud (0.5mm thick having one flange of 34mm and another flange of 36mm made of GI Steel) placed at 610mm centre to centre in 72mm Gypsteel ULTRA® floor and ceiling channel (0.5mm thick have equal flanges of 32mm made of GI steel), which is anchored to the floor & true ceiling using HILTI HLC 8X40/HILTI X-GN20MX anchor fasteners at 600mm c/c in zigzag manner. Stud and floor channel are crimped together with crimping tool.	Sqmt	222.50

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

		A Gypsteel ULTRA noggin channel of 70mm width (0.5mm thick having two flanges of 40mm each) has to be provided at the horizontal joints of the two boards screw fixed to the studs using Gyproc Metal to Metal flat head screws. The boards are to be fixed vertically to the framework with joints staggered to avoid leakage through joints. 25x25x0.5mm Gyproc angle bead should be used at all L-Junctions of partition. Finally square and tapered edges of the boards are to be jointed and finished so as to have a flush look which includes filling and finishing with Gyproc Pro-Fill Jointing compound, Gyproc Joint Paper tape or fiber tape (as per recommended practices of Saint- Gobain Gyproc India Ltd). The junction of the partition with masonry & all penetration through the partition has to be treated with Hilti/Pyroplex fire and acoustic sealant. All other detailing and specifications to be followed as per approved drawing of Gyproc.		
d)				
1		GYPSUM BOARD CEILING : Providing and fixing at all heights false ceiling including providing and fixing of frame work made of special sections power pressed from M.S. sheet and galvanized in accordance with zinc coating of grade 350 as per IS: 277 and consisting of angle cleats of size 25mm wide X1.6mm thick with flanges of 22 mm and 37mm at 1200mm centre to centre one flange fixed to the ceiling with dash fastener 12.5mm diaX40mm long with 6mm dia bolts to the angle hangers of 25X25X0.55mm of required length, and other end of angle hanger being fixed with nut and bolts to G.I channels 45X15X0.9mm running at the rate of 1200mm centre to centre which the ceiling section 0.5mm thick button wedge of 80mm with tapered flanges of 26mm each having clips made out of 2.64mm diaX230mm long G.I wire at every junction including fixing the gypsum board with ceiling section and perimeter channels 0.5mm thick 27mm high having flanges of 20mm and 30mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450mm centre to centre with 25mm long drive-all screws@230mm interval including jointing and fixing to a flush finish of tapered and square edges of the board with recommended filler, jointing tapes, finisher as per manufactures specification and also including the cost of making openings for lights fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed all complete as per drawing and specification and direction of the Engineer in Charge. (All G.I. steel sections make Saint Gobain Makes)		
i)		Rooms (Repair works)	Sqmt	35.00
ii)		Toilets	Sqmt	196.70

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

iii)		Reception	Sqmt	34.97
iv)		Early Intervention room	Sqmt	35.13
v)		Play and Intervention Area	Sqmt	55.48
2		Armstrog False Ceiling: Providing and fixing False Ceiling Tiles of approved materials of size 595X595 mm in true horizontal level suspended on inter locking metal grid of hot dopped galvanized steel sections(galvanized @170 gsm/sqm.) consisting of main "T"runnre suitably spaced at joints to get required length and of size 24X38 mm made from 0.30mm thick (minimum) sheet spaced at 1200mm center to center and cross "T" of size 24X25mm made of 0.30mm thick(minimum) sheet, 1200mm long spaced between main "T" at 600mm center to from a grid of 1200X600 mm and secondary cross "T" of length 600mm and size 24X25 made of 0.30 mm thick (minimum) sheet to be interlocked at middle of the 1200X600mm panel to from grids of 600X600mm and laying false ceiling tiles of approved texture in the grid including, wherever, required, cutting / making. Opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc. Main"T" runners to be suspended from celling using GIslotted cleats fixed to ceiling with 6mm dia and 50mm long dash fasteners, 4mm GI adjustable rods with galvanished level center to center along main T, bottom exposed width of 24mm of all T-sections shall be pre-painted with polyester paint, all complete at all heights as per specifications drawings and as directed by Engineer-in-Charge. (All G.I. steel sections make Saint Gobain Makes)		
i)		Rooms (Repair works)	Sqmt	35.00
3		**Cove:** To be formatted out of MS tube fabricated structure in design & profile given by the architect. The chicken/expanded metal wire mesh to be welded/ screwed to frame to Format a net to receive POP. OR To be formatted out of ceiling sections, wooden frames and gypboard with curvatures or cove light sections in for of suspended ceilings. The rate shall include profile of Cornices, Molding, Light fitting & A/c grills.	Rmt	50.00
4	METAL CEILING IN TOILETS	Providing and fixing in position Suspended ceiling System with Aluminum Metal ceiling tiles in size 600x600 with 16x8 mm regular edge profile. These will be installed by clip-in system. Plain white powder coated tiles with NRC=0.1 and sound attenuation of 44dB. Suggested Brand: Arm strong, Orcal planks as per approval or equv, & clip on system. Eachte: Total area shall be taken under the Ceiling including Lights and Diffusers shall be taken for measurements.	Sqm	RO

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

5	TRAP DOOR	Repairing of trap door in false ceiling made of "Novapan board, dead locks, lipping all around including all hardware, angles, hinges etc. complete as per design and drawing. Extra paneling of ceiling board (Plain / Perforated) on the Novapan board	Each	12.00
e)				
1	JANITOR CLOSET	Providing and fixing Janitor Closet 450mm deep comprising of caracas and shutters constructed from 20mm thick BWP finished in 1mm thick laminated shutter 200x200 ceramic tile cladding all inside surfaces, one number shelf cladded with 200x200 ceramic tile on all side including BW lipping and surround etc. Rate should be inclusive of necessary hardware handle, Lock sets, self-closing hinges, latch inside all cabinet hardware approved by the Architect. Cost of laminate Rs. 325/- per Sqm. The rate to include Sink with counter, all plumbing connections for the same.	No.	2.00
2	VANITY COUNTERS	Providing and fixing in position wash basin/ vanity counter of overall size 1480mm x 600mm x 875mm as per detail in drg. No. GRB2 (DT-). It shall be made out of 19mm thick marine ply. 16mm thick GRANITE, shall be fixed on top facia and back splash. The job shall be include making eased, moulded and polished edge, cutting hole for basin, etc. complete. Bottom open shelve box shall be made out of bwr ply and oak veneer lining in it. Edge to have lipping.	SQ.M	RO
3	RECEPTION	Reception Table made with Ply Board / MDF with lacquered glass band as per drawing and corian finish on top and front. Storage cabinet provided on the side and drawer system below	No.	1.00
f)				
1	**NEW DOOR FRAME**	P/F. Charp wood (75mmx63mm) doors frame in the position with Steel screws for door to frame as directed, providing necessary mouldings in frames as required/as per drawing i\c. painting of surfaces coming in contact with walls etc. with preservative (of approved quality) complete as per drawing and specification and direction of the Engineer in Charge.		
	i)	Hard wood (Charp) as approved by the Architect.	Cum	0.43

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

2	**FLUSH DOOR SHUTTERS**			
a)	NEW FLUSH DOOR SHUTTER	Providing and fixing Internal Toilet doors of 40mm thick flush door construction in block board of commercial grade with 6mm thick teakwood lipping on all exposed edges including. Vertical surfaces to be finished in laminate from both the side of the toilet and 300mm ht SS sheet fixed at bottom inside face including all door fittings as per approved makes.		
	i)	TOILETS (900X2100)	Sqmt	10.00
	ii)	WC(750X2100)	Sqmt	RO
b)	NEW FLUSH DOOR SHUTTER	Providing and fixing Internal doors of 40mm thick flush door construction in block board of commercial grade with 6mm thick teakwood lipping on all exposed edges including provision of a vision panel 150mmX150mm with 3mm thick clear floated glass fixed with beading all around. Vertical surfaces to be finished in laminate from both the sides including all door fittings as per approved makes.		
	i)	PANTRY SLIDING SHUTTER (900X2100)	Sqmt	9.00
	ii)	ROOMS (900X2100)	Sqmt	24.00
	iii)	ROOMS (1500X2100)	Sqmt	10.00
3	Old door with Single shutter	Refixing Internal Toilet doors of available at site in good condition. Repairing flush door including vertical surfaces to be finished in laminate from both the side of the door shutter and moulding with adhesive, SS sheet fixed over door shutter up to 300mm ht from bottom inside face including all door H/W. fittings as per approved makes complete in all respects as per drawing and Architects.		
	I)	WC	Each	16.00

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

4	**WINDOWS**			
	1	Providing and fixing Powder coated aluminium, with extruded built up standard tubular and other section of approved make conforming to IS: 733 and IS: 1285, powder coating to required shade. (minimum powder coating of 50 micron), fixed with rawl plugs and screws or with fixing clips, or with expansion hold fasteners including necessary filling up of gaps at junctions at top bottom and sides with required PVC/ neoprene felt etc. Aluminium section shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle. Aluminium U/ snap beading for glaing/ paneling, C.P. brass/ stainless steel screws, all complete in all respects as per drawing and Architects.		
		Using 10mm ST-420 Toughened Glass + 12mm Air Gap +10mm clear Floated Toughened using window Frame EURO Groove 46mmX50mm Outer Frame and 66mmX50mm Mullion (Yentana Series)		
a)		For Fixed Portion	Sqmt	RO
b)		Extra for Openable	Sqmt	RO
	2	Double Toughened Glass + 8mm Air Gap +6mm clear Floated Toughened using window of approved makes powder coated aluminium window for observation room as mentioned in the drawing as follows: Outer Frame wt .43 kg/rmt, U Clip Beading Section wt .199kg/rmt .	Sqmt	4.58
g)				
1	3M Projection Cum Writing Film	Supply & Installation of 3M PWF-500 film for projection cum writing. The film should have a gloss finish and grey adhesive for good hiding power and will be applied on a flat surface with clean, dry, very smooth and non-porous surfaces. The use of xylene free markers is recommended for writing and the use of a soft lint free towel such as 3M Scotch Brite microfibre cloth is recommended for cleaning the film. The film can be cleaned occasionally with mild detergent and water if required.	Sqmt	10.00
2	3M Di-Noc Chalk board film	Supply & Installation of 3M Di-Noc Architectural Surface Finishes, Self-adhesive, bubble-free installation to be done on a smooth, dust free putty surface that has a coat of oil-based primer, by 3M Authorised Installers only. The surface should be able to serve the purpose of a chalk board.	Sqmt	10.00

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

3	3M Printable Vinyl	3M white vinyl in white color with matte or gloss surface, with thickness of 10 mils recommended for flat or simple curved surfaces. Can be pasted on metal, painted or rigid PVC. With suitable over laminate for protection of graphic		
i)		IJ 1220	Sqmt	120.00
iv)	LG printable vinyl	White or Gloss Over laminate	Sqmt	RO
6		Providing & fixing in position wall paper as per detail in FFE & drg. The job shall be done as per manufacturer's specification. The job shall also include making base with putty & primer.	Sqmt	RO
7		P/A 2 or 3 coats of roller finish. Acrylic emulsion paint- ICI or equiv. of approved colour complete with all base work preparation.	Sqmt	820.00
8		P/A 2 or 3 coats of roller finish, ICI Velvet touch or equivalent. in dark colours	Sqmt	RO
9		P/A 2 or 3 coats of Texture Paint in SKK / Bell Art or equivalent in grey colour	Sqmt	RO
10		Providing and Fixing Blackout film in Eye OPD and Audiometry room of Birla 3M 150 micron fixed as/suppliers specifications and pattern given by Architect.	Sqmt	56.28
h)				
1	Table side Storage	Providing and fixing overhead 600mm height 375mm deep out of 19mm thick ply with shutters finished in laminate on both sides mounted on hinges. 1mm thick laminate on outer surface and 0.8mm thick on all inner surface, inclusive all necessary fittings. Complete in all respects.	Sqm	14.66
2	Over Head Storage	**Over Head Storage:** Providing and fixing overhead 600mm height 375mm deep out of 19mm thick ply with shutters finished in laminate on both sides mounted on hinges. 1mm thick laminate on outer surface and 0.8mm thick on all inner surface, inclusive all necessary fittings. Complete in all respects.	Sqm	10.17

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

3	Under counter storage	**STORAGE UNDER COUNTER:** P/F of storage below the counter 750 depth in 19mm thick water proof commercial ply with 12mm ply backing. The horizontal and vertical divisions as / detailed approved drawings. The edges of the shutters will have 2mm thick pvc edge binding tape. The handles will be stainless steel as / approved and shutters will be on autoclosing hinges. All inside surfaces will be laminated finish and shutters too will be laminate finish.	Sqmt	12.56
4	Cabinets for Record Room	Providing and Fixing full height cabinets for Record Rooms of depth 375mm and height 2100mm with 4.5mm thick clear floated Modi Guard glass shutter above 750mm and below 19mm thick shutter. 19mm thick water proof commercial ply with 12mm ply backing. With lockable arrangements. The horizontal and vertical divisions as / detailed approved drawings. The edges of the shutters will have 2mm thick pvc edge binding tape. The handles will be stainless steel as / approved and shutters will be on auto closing hinges. All inside surfaces will be laminated finish and shutters too will be laminate finish.	Sqmt	43.18

i)	**LOOSE FURNITURE**			
	TABLES			
1	**Cabin Table** 	**Executive Cabin Table: 1500 Wide x 900Depth x 750HT Side Panel:** 1500Wide x 400Depth x 660HT **Table Top:** Made of 25mm Thick OSL particle board with matching PVC edge banding. **Gable End:** Made of 25mm thick BSL particle board with matching PVC edge banding. **Modesty Panel -** 1200 x 450HT 18mm Thick BSL Particle board Modesty Panel. **Wire Management** (optional): Grommet / bilkin type socket Data / Vertibra. **Screen:** Made of 25mm BSL particle board with PVC Lipping **Storage:** Made of 25mm thick OSL particle board with openable shutters, All storage will support with screens. Storage top & side are UV coated Laminate with scratch resistance.	Each	11.00

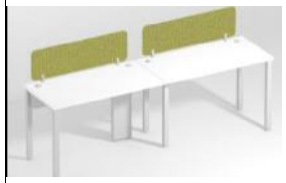
Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

		Executive Cabin Table : 1500 Wide x 750Depth x 750HT SIDE CREDENZA : 1200Wide x 450Depth x 750HT Specifications Table Top - 25mm thick Pre Lam particle board with 2mm edge lipping on all exposed sides Support - Supported on 25mm thick Pre- Laminated Particle Board Gable ends & 18mm Thick Pre-Laminated Particle Board Modesty Panel with suitable spacers & Levelers. SSTORAGE UNITS: The structure is made out of 18mm Thick Pre-Laminated Particle Board. The Shelves are adjustable in height. The shutters are fitted with auto closing hinges. Recessed Aluminum handles, central locking system, levelers & other necessary hardware are provided.	Each	RO
2		**PRODUCT - LINEAR TYPE WORKSTATION (PERFORM)Data Op/Anthropometrical Room SIZE : 1200 x 600 x 750HT Specifications: Main Screen -** 12 MM Thick fabric magnetic screen having size 1050x350mm **Table top -** PLB 25mm thick pre-lam particle board finished with 2mm PVC edge banding. **Under-structure -** Supported on ms powder coated sq. 50x50 straight perform legs with ms powder coated cross beam 40x20. **Wire Management -** 65 dia wire manager hole per workstation. **Raceway -** 250mm HT, 70mm thick raceway with laminated fascia is provided & vertical wire entry is considered.	each	5.00
		**PRODUCT - LINEAR TYPE WORKSTATION -Orthopedic OPD SIZE : 1050 x 600 x 750HT Specifications: Main Screen -** 12 MM Thick fabric magnetic screen having size 900x350mm **Table top -** PLB 25mm thick pre-lam particle board finished with 2mm PVC edge banding. **Under-structure -** Supported on ms powder coated sq. 50x50 straight perform legs with ms powder coated cross beam 40x20. **Wire Management -** 65 dia wire manager hole per workstation. **Raceway -** 250mm HT, 70mm thick raceway with laminated fascia is provided & vertical wire entry is considered.	each	1.00

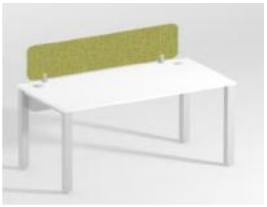
Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

3				
		**PRODUCT - LINEAR TYPE WORKSTATION Eye SIZE : 1050 x 750 x 750HT Specifications: Main Screen -** 12 MM Thick fabric magnetic screen having size 900x350mm **Table top -** PLB 25mm thick pre-lam particle board finished with 2mm PVC edge banding. **Under-structure -** Supported on ms powder coated sq. 50x50 straight perform legs with ms powder coated cross beam 40x20. **Wire Management -** 65 dia wire manager hole per workstation. **Raceway -** 250mm HT, 70mm thick raceway with laminated fascia is provided & vertical wire entry is considered	Each	1.00
		**PRODUCT - LINEAR TYPE WORKSTATION Dentist Room SIZE : 1500 x 600 x 750HT Specifications: Main Screen -** 12 MM Thick fabric magnetic screen having size 900x350mm **Table top -** PLB 25mm thick pre-lam particle board finished with 2mm PVC edge banding. **Under-structure -** Supported on ms powder coated sq. 50x50 straight perform legs with ms powder coated cross beam 40x20. **Wire Management -** 65 dia wire manager hole per workstation. **Raceway -** 250mm HT, 70mm thick raceway with laminated fascia is provided & vertical wire entry is considered.	Each	1.00
		PRODUCT - BOARD ROOM TABLE Size: 4800 x 1050 x 750HT Specification: Table top - PLB 25mm thick pre-lam particle board finished with 2mm PVC edge banding. **Under-structure** - Supported on 25mm thick PLT gable end & 18mm thick PLT modesty. **Wire Management -** 4 nos. of MS Flip up 450mm without switch & socket, ABS cable dump, vertical wire entry cover are considered.	Each	1.00

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

		PRODUCT - PLB MOBILE PEDESTAL (2D+1F) Size - 400L x 450D x 640HT. Specifications : Made of 18mm thick PLB with 2 Drawer +1 Filling unit arrangement, Castors are provided for easy mobility of the pedestal, Suitable recessed handles, Locking system & other necessary hardware are provided	Each	15.00
4	**CHAIRS**	Providing and laying chairs to be of 25mm Stainless Steel pipe frame and seats to be in wood fall upholstered seat and back of finishing in fabric / leatherite as per approved colour and fabric / letherite, including PP Base for stability, Heavy duty double wheel castors.		
		Doctors chair	Each	11.00
		In front of doctor patient chairs	Each	22.00
		Board Rm table's chairs	Each	14.00
		Board Rm chairs except table	Each	10.00
5		Chairs to be of 25mm Stainless Steel pipe grade 304 frame and seats to be in wood full upholstered seat and back of finishing in fabric / leatherite as per approved colour and fabric / letherite, including PP Base for stability, Heavy duty double wheel castors.		
	i)	Single Seater Visitor chair	Each	3.00
	ii)	2-Seaters visitor chair	Each	9.00
	iii)	3-Seaters visitor chair	Each	13.00
	iv)	Workstation	Each	4.00
	v)	Reception chair	Each	2.00
6	**SOFA**	Providing and laying, Sofa in leatherite Semi Premium Quality for Reception area Seating as per architectural drawing and design.	Each	
		Waiting area Chairs (tandem Pu) Featherlite make in brushed aluminum finish	each	10.00

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

j)	**CHILDREN FURNITURE**			
		Providing and Fixing cabinets for Toys / books in Sensory garden area and Early Intervention Occupation therapy	Sqm	20.00
		Decorative shelves in each OPD for display of stuffed toys	per	20.00
		Loose furniture in Occupational Therapy, Waiting area and Sensory Garden. (can be directly procured by DEIC) as per Architects design and layout	Nos	
k)	**MISCELLANEOUS WORK**			
1		Providing and fixing 3D MDF designed cutout on wall. MDF prevented with pressing1imm thick veneer from face and back to prevent curl. To fixed in position bettens or studs at 600C/C around periphery with good quality adhesive and countersunk SS screws. MDF finished with DECO paints completed in each room as per direction of architects and as per design and drawings.	Sqmt	100.00
2		Providing and fixing 6mm thick fundarmax 450mm high on existed staircase railing to secure misshaping from Ground floor to Fourth floor with the SS screw or SS nut and bolts etc., as per design, drawing and direction of architects. Panels are high pressure laminated panels composed of cellulose fibers impregnated with synthetic resin and are manufactured. The panels have a mean dry density of 1400 kg·m–3 and a mean water absorption value of less than 2%, in accordance with BS EN 438-2 : 2005	Sqmt	15.10
3		**STERILIZED BASIN:** 2-Stations Surgical Sink is made of grade #304 stainless steel and measures 1400 x 560 x 870. It features mirrors and a splash proof taps are a knee-touch switch and a supply of soap or liquid, as well as automatic heating, scrubbing, and drying equipment model No. JDTXS-312 JNG DONG makes.		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

		For Sterilization Sink and Orthopedic Sink	Each	2.00
4		**SIGNAGE**		
a)		Providing and fixing signages of required size and colour. 5mm thick clear cast acrylic vinyl cut and paste along with Stainless steel spacers. List of doctors with designation.		
	i)	Signage 36"X60"	Each	1.00
		Providing and fixing signage of required size and colour with aluminium frame 3mm sunboard along with vinyl print 15"X5" (Name plate for Dr./ department.		
	i)	Signage in front of doors	Each	41.00
	ii)	Signage for direction	Each	6.00
c)		Providing and fixing signages of required size and colour with display acrylic box with aluminium frame along with 4 hours battery backup of lighting.		
	i)	Signage for Fire Exit/ Staircase/Lift etc.	Each	8.00
	ii)	Signage at staircase entry (18"X48")	Each	1.00
5		**VERTICAL BLINDS:**		
	a)	Providing and fixing **Remote controlled Horizontal / Vertical blinds** (Inspection rooms) of Make- MAC / Vista Levellers / Equivalent as per approved sample. Rollershades- automatic drive system in windows with moulded plastic with steel rectangular support pin and inserted into the tube end drive unit assembled in end plug, support brackets, roller tube, bottom rail, fabrics etc. all complete including operation guarantee. (Remote Controlled Drive Unit cost Extra)	Sqmt	RO
	b)	Remote controlled unit	each	RO

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

		c)	Providing and fixing **Manually Drive Horizontal / Vertical blinds** (Dr. Rooms) of Make- MAC / Vista Levellers / Equivalent as per approved sample. Rollershades- chain drive system in windows with moulded plastic with steel rectangular support pin and inserted into the tube end manually drive unit assembled in end plug, support brackets, roller tube, bottom rail, ball chain etc. all complete including operation guarantee.	Sqmt	95.23
4.00	**PLUMBING/SANITARY WORKS:**				
a)	**TOILETS WORKS**				
i)		P/F 12mm thick Toughened Glass separators for Urinals with 3M Frosting Film as per Drawing Fixed to the wall with SS Pipes and other fitting hardware as shown in drawing.		Each	4.00
ii)		P/F Mirror paneling with cove light provision on all four sides. The paneling shall be done in bwr ply framework with necessary provisions for cove for fixing LED based lightstrip. The 6mm mirror shall then be pasted with appropriate silicon based adhesive and shall have bevelled edges. the edge of the ply shall be pasted with edge band tape - in Toilets		Each	4.50
iii)		Rectangular framed mirrors of size 1'-3"x1'-6" in consultant rooms and Toilets		each	11.00
b)	**GLAZED VITREOUS CHINA SANITARY WARE FIXTURES**				
i)		P/Fixing white vitreous china wall hanging European type water closet with CP bolts, nuts, CI Chair or other hanging arrangement with dual concelled flushing cistern with internal fittings, white solid plastic sheet and cover with lid, CP brass hinged rubber buffers with accessories, CI/ MS brackets painted with two coat of primer, CP brass screws and wooden cleats including cutting and making good the wall and floors wherever required.		Each	RO
ii)	**Refixing W/C**	Fixing white vitreous china European type water closet with CP bolts, nuts, CI Chair or other hanging arrangement with dual flushing cistern with internal fittings, white solid plastic sheet and cover with lid, CP brass hinged rubber buffers with accessories, CI/ MS brackets painted with two coat of primer, CP brass screws and wooden cleats including cutting and making good the wall and floors wherever required.		Each	16.00

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

iii)		P/Fixing white vitreous china wash basin of size 58x43 cms for above counter mounting, 32mm C.P.waste, 32mm dia cast brass bottle trap/P trap and connection pipe to wall with C.P. wall flange and rubber adopter for waste connection, complete including cutting and making good the walls, wherever required.	Each	16.00
iv)		P/Fixing white vitreous china wash basin of size 58x43 cms for above counter mounting, 32mm C.P.waste, 32mm dia cast brass bottle trap/P trap and connection pipe to wall with C.P. wall flange and rubber adopter for waste connection, complete including cutting and making good the walls, wherever required. (Basin for Doctors room)	Each	10.00
v)	**Refixing Basin**	Fixing white vitreous china wash basin of size 58x43 cms for above counter mounting, 32mm C.P.waste, 32mm dia cast brass bottle trap/P trap and connection pipe to wall with C.P. wall flange and rubber adopter for waste connection, complete including cutting and making good the walls, wherever required.	Each	20.00
vi)	**Urinals with water used**	P/Fixing white vitreous china flat back urinal With semi stall with Electrical Operated Sensor of with C.I. hangers, 15mm dia spreaders, 32mm dia C.P. brass domical waste, 32mm dia cast bottle trap, and connection pipe to wall with C.P. flange, complete including cutting and making good the walls and floors wherever required.	Each	4.00
vii)	**Urinal without water used**	P/Fixing without water white vitreous china flat back urinal with semi stall with Concealed brackets painted with two or three coats of enamel paint of approved shade over a coat of primer, C.P. brass spreader, 32 mm dia C.P. brass waste, 32 mm dia C.P. brass bottle trap and pipe upto wall with C.P. brass flange complete in all respects, including cutting holes in brick masonary and R.C.C. and making good the walls and floors wherever required. (HINDWARE MAKES)	Each	RO
c)	**WATER SUPPLY FITTINGS**			
i)		P/F. Mini Waste paper basket in SS perforated sheets of approved make in SS brushed finish. (Dream Kraft or equivalent make).	Each	16.00
ii)		P/F. Mini Waste paper basket (WC) of Kimberly Clark/ Dream Craft make or equivalent make.	Each	8.00
iii)		P/F. Wall mounted paper towel dispenser of Kimberly Clark/ Dream Craft make or equivalent make.	Each	16.00

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

iv)		P/F. Liquid soap dispenser of Kimberly Clark/ Dream Craft make or equivalent make.	Each	8.00
iv)		P/F. SS grab bar for handicapped toilet as per drawing of Kimberly Clark/ Dream Craft make or equivalent make.	Each	8.00
v)		Providing & Fixing EH27NW stainless steel automatic hand dryer wall mounted touch free infra-red activation of Kimberly Clark make including cutting and making good the walls wherever required complete as directed by Engineer in charge.	Each	8.00
vi)		Providing & Fixing toilet paper holder with Flap including cutting and making good the walls wherever required complete as directed by Engineer in charge.	Each	8.00
vii)		P/Fixing 15mm C.P.brass angle valve with C.P copper connecting pipe 375mm long and nuts, washer with C.P. brass flange complete, including cutting and making good the walls, wherever required.	Each	90.00
viii)		P/Fixing CP brass single lever wash basin deck mounting mixer with pop up waste complete including cutting and making good the walls where required.	Each	26.00
ix)		Providing & Fixing C.P. brass cast twin coat hooks fixed to wall/door with wooden cleats and S.S screws including cutting holes in wall and making good the wall wherever required.	Each	26.00
x)		P/Fixing of C.P brass air purifier container, fixed to wooden cleats with C.P brass screws, complete including cutting and making good the walls wherever required	Each	16.00
xi)		P/Fixing CP brass Health faucet with PVC Flexible Tube with wall hook including angle valve etc. complete	Each	16.00
xii)		Providing and fixing 125 mm C.P. grating of approved quality.	Each	25.00
xiii)		Providing & Fixing, Installation and testing15mm dia C.P. brass long body bib tap with C.P. brass threaded wall flange complete including cutting holes & making good the wall wherever required complete as directed by Engineer in charge..	Each	2.00

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

xiv)		Providing and fixing 5mm thick mirror of superior glass (of approved makes , quality) and of required shape and size with SS Studs and with 6mm waterproof hard board backing.	Sqmt	5.50
xv)		Providing and fixing coloured solid PVC plastic seat and cover in European type WC pan.	Each	16.00
xvi)		Providing & Fixing, Installation and testing15mm dia C.P. brass concealed stopcock with C.P. brass threaded wall flange complete including cutting holes & making good the wall wherever required complete as directed by Engineer in charge..	Each	8.00
3		**GYSER:**		
		Providing and Fixing Gyser (of approved makes) of following capacity with nuts and bolts grouted in wall with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate), connection to inlet and outlet pipes complete including cutting and making good the walls wherever required in all respect.		
	a)	15 liters capacity (Havells Manza EC-5S)	RO	Each
	b)	25 liters capacity (Havells Manza Slim)	6	Each
	c)	50 liters capacity (Havells Manza Slim)	RO	Each
4	**Pantry**			
i)		P/F. Waste paper basket Perforated bin capacity 7 Ltr. of Kimberly Clark/ Dream Craft make or equivalent make.	Each	RO
d)	**PLUMBING/ SANITARY WORKS**			
1		Providing and fixing uPVC SWR pipes Type A including all fittings with or without access i.e. bends, junctions, cowls, offsets, etc. of approved makes, and jointing with solvent cement and excavation, concreting all around pipe with M15 including curing, refilling and disposal of surplus earth, including cutting wall and making holes in walls and floors, wherever required and making good the same, complete as directed by the Engineer-in-Charge.		
a)		160 mm dia	Rmt	
b)		110 mm dia	Rmt	105.00

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

2		Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of clamping and making good the same including testing of joints complete as per direction of Engineer in Charge.		
a)		20 mm OD	Rmt	225.00
b)		25 mm OD	Rmt	45.00
c)		32 mm OD	Rmt	35.00
d)		40mm OD	Rmt	RO
e)		50mm OD	Rmt	75.00
3		Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge. Concealed work, including cutting chases and making good the walls etc.		
a)		20 mm OD	Rmt	RO
b)		25 mm OD	Rmt	RO
c)		32 mm OD	Rmt	RO
d)		40mm OD	Rmt	RO
e)		50mm OD	Rmt	RO

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

5.00	**ELECTRICAL WORKS**			
	a)	**<u>POINT WIRING:</u>**		
	1	Wiring for lights, fans, utility outlets in concealed/ surface manner as directed using 3x1.5sq.mm (P,N+E) FRLS PVC insulated multi-stranded copper conductor wires in 2mm wall thickness PVC conduit including MS junction boxes, pull boxes, pvc closer / bushing, proper saddling at every 1500mm intervals in case of surface piping, galvanized switch boxes (16G), connector, including 2x2.5 + 1x1.5 sq mm (P,N+E) circuit wire from DB to switch box any length complete with 6A modular switches and blinkers as specified: (Only Eight to Ten Point per circuit.)		
	i)	Wiring as above item no 1.00 for ceiling /wall/ point controlled by a 6A switch.	Each	16.00
	ii)	Wiring as above item no 1.00 but for additional point controlled by existing 6A switch.	Each	RO
	iii)	Wiring as above item no 1.00 but for two way light point controlled by 2nos 2way 6A switch.	Each	RO
	iv)	Wiring as above item no 1.00 but for ceiling fan point including modular type steps fan regulator, fixing of fan hook in the slab.	Each	RO
	v)	Wiring as above item no 1.00 but for wall mounted exhaust/ cabin fan including supplying and fixing 3 pin 6A socket near the outlet for portable connection and a 6A switch housed in a separate switch box.	Each	43.00
	vi)	Wiring as above item no 1.00 but for 3 pin 6A switch socket including supplying and fixing 3 pin 6A switch and socket outlet box and plate.	Each	144.00
	vii)	Wiring as above item no 1.00 but for 6pin 6/ 15A plug socket with 2x4 sq.m. PVC insulated copper wire including earthing the third pin with 1.5 sq.mm pvc insulated copper earth wire and supplying & fixing 6 pin 5/15A switch and socket.	Each	128.00

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

	viii)	Wiring as above item no 1.00 but for 25A plug for A/C with 2x6 sq.mm pvc insulated copper wire including earthing the third pin with 1.5 sq.mm PVC insulated copper earth wire and supplying & fixing 3 pin 25A socket, & 25A switch in MS box. (Only one power plug per circuit)	Each	25.00
	b)	**<u>MAINS AND SUB-MAINS:</u>**		
	1	Wiring for mains and sub-mains in a concealed/ surface manner using PVC insulated copper wires in 2mm wall thickness PVC pipe with continuous run of copper earth wire, necessary junction boxes, pull boxes, checknuts, etc. as detailed below:		
	a)	With 4 x 16sq.mm PVC insulated copper wires in 40mm dia conduits including 2x4sq.mm PVC insulated copper earth wire.	Rmt	RO
	2	Supplying and laying heavy duty 1100Volt grade PVC insulated PVC sheathed armoured cable with aluminium conductors of the following sizes including providing and fixing of necessary cable clamps on wall/ ceiling/ trench as required:		
	a)	4 x 25 Sq.mm cable	Rmt	100.00
	b)	3.5 x 50 Sq.mm cable	Rmt	RO
	c)	3.5 x 95 Sq.mm cable	Rmt	RO
	3	Making cable terminations with all materials required including glands, nuts, bolts PVC tape, crimping lugs etc. complete as required for the following sizes:		
	a)	4 x 25 Sq.mm cable	Each	16.00
	b)	3.5 x 50 Sq.mm cable	Each	RO
	c)	3.5 x 95 Sq.mm cable	Each	RO
	c)	**<u>DUMMY PIPE FOR COMMUNICATION & P.A. SYSTEMS:</u>**		
	1	Providing and laying the following sizes and types of dummy pipes for telephone and television systems complete with necessary junction boxes, pull boxes, 18G GI pull wire as required with all bends and saddles provided in case of surface pipes:		
	a)	25mm dia PVC pipe	Rmt	100.00

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

	b)	32mm dia PVC pipe	Rmt	RO
	2	Providing and fixing appropriate NorthWest cover plates with RJ 11 type outlet for telephone including 18G galvanized MS boxes.	Each	33.00
	3	Supplying and drawing 0.61sq.mm ATC wire for telephone system of the following sizes in existing pipes:		
	a)	2 pair cable	Rmt	100.00
	b)	10 pair cable	Rmt	200.00
	4	Supplying, fixing, connecting and commissioning following sizes of telephone tag boxes with Krone type tag blocks in 16G MS box duly painted with hinged cover:		
	a)	10 pair tag box	Each	33.00
	5	Supplying, fixing, and connecting AMP / MOLEX RJ 45 (MPS100) port for computer Data outlet complete with 16 gauge MS galvanized box, matching face plate as required.	Each	32.00
	6	Supplying and laying AMP / MOLEX Cat. 6 cable for data networking in existing conduit / raceway.	Rmt	150.00
	7	Supplying and laying 110 mm dia 6Kg PVC pipe including digging refilling, jointing etc as required.	Rmt	RO
	d)	**<u>DISTRIBUTION BOARDS:</u>**		
	1	Supplying and fixing, connecting, testing and commissioning the undermentioned recessed Metal sheet double door type DB's with insulated copper bus-bars, neutral links, and earth terminals, all enclosed in 16G MS box complete with hinged metal covers interconnections, bonding, to earth, painting and labelling as required with MCBs mounted phase wise in three tiers:		
	a)	**4WAY TPN LIGHT & POWER DB**		
		Incomer:-		
		1 no 40A TPN MCB		
		Outgoing:		
		3 nos 40A DP ELCBs 100mA		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

		12nos 6/10/16A SP MCB	Each	RO
	b)	**6 WAY TPN LIGHT & POWER DB**		
		Incomer:-		
		1 no 63A TPN MCB		
		Outgoing:		
		3 nos 63A DP ELCBs 100mA		
		18 nos 6/10/16A SP MCB	Each	2.00
	2	**BSES METER BOARD**		
		Supplying the following sheet steel cubicle type panels fabricated from 16 gauge CRCA sheet, dust and vermin proof, indoor type TPN Main board with hinged lockable doors fabricated from 14 gauge CRCA sheet, suitable for 415V, 3 phase 4 wire 50Hz AC supply with separate cable alley and lockable bus-bar chamber and including supplying and fixing following switchgears and accessories, inter-connections, bonding to earth, power coted painting and marking as specified. Switch board complete as per schematic diagram:		
		Type of construction: Form 3, IP classification: 42		
		Incomer		
		1 nos 200A TPN MCCB 25 kA inbuilt Microprocessor release having protection against O/L & S/C, with rotring handle complete with		
		Busbar: 300A TPN Aluminum with Heat Shrink Sleeve		
		Outgoings:		
		5 nos 80A FP MCBs with Space for 5nos four wire 10-60A three phase 50Hz AC supply electronic KWH Meter in hinged lockable doors with viewing glass doors, door sealing arrangement will be as per BSES requirement. Separate cable alley and lockable Aluminium bus-bar chamber, with sealing arrangement as required.	Each	RO
	3	**MAIN PANEL:**		
		Proving and fixing Cubicle type, base mounting control panel with hinged doors, undrilled bottom gland plate, AL. Bus Bar and accommodating the following:		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

		SWITCH GEARS: 45A, 4 Pole Contactor for ALTERNATOR with Thermal O/L relay 45A, 4 Pole Contactor for MAINS (OPTIONAL)		
		BACK-UP PROTECTION: MCB for short circuit protection		
		MICROPROCESSOR BASED AMF MODULE INCORPORATING: Functions: supply, failure timer, restoration timer, 3 Impulse automatic engine Start / Stop logic & engine fails to start lockout Mains / Generator Voltage & Frequency Monitoring.		
		Multi-functional Meter with Scrolling Readings for: Water Temperature/ Oil Pressure, Voltage / Ampere/ Frequency / kW / kVA, Running-hour counter		
		Electronic kWH meter (Counter Display) Current Transformers: Indications (LED): DG ON, Load on DG Mains ON, Load on Mains, Battery Charger ON Push Buttons (AMF MODULE BY PASS MODE) : Engine START / STOP (Provided on Engine Controller) Generator Contactor CLOSE / TRIP, Mains Contactor CLOSE / TRIP (If provided), Fault ACCEPT / RESET		
		BATTERY CHARGER: SMPS Based Unit with inbuilt Auto/Manual & Float/Boost Facility, DC Voltmeter & Ammeter (Separate)	Each	1.00
	e)	**EARTHING:**		
	1	Earthing with **GI earth** plate 600mm x 600mm x 6mm thick including accessories, and providing masonary enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal or coke and salt complete as required. (Earth resistance should not be more than two ohms.)	Each	RO
	2	25 x 6mm thick GI tape	Rmt	RO
	f)	**MISCELLANEOUS WORK**		
1		Providing and Fixing Bell points in Each Consultant cabin including wiring complete.	each	12.00
2		Providing and Fixing anchor fasteners capable of 150 kg load on main ceiling in Occupational Therapy and Sensory Garden therapy as per location given in drawing	Each	10.00
3		Providing speaker wiring for Audiometry room	Each	1.00
4		Providing speaker wiring for entire DEIC with Controls at reception	Each	12.00

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

5	**CCTV system**	Providing and fixing NVR IP- Dome and Bullet cameras with DVR including 32" NVR DVR TV etc. complete.		
	i)	32" NVR DVR TV MODEL -TD35564H8	each	1.00
	ii)	NVR 1P Dome+ Bullet cameras TV- model- TD952451, TD952152(2Amp)	each	24.00
	iii)	HDD4TB Surveillance (WD)	each	2.00
	iv)	Power Supply 5mps	each	6.00
	v)	D-link internet switch 4port	each	4.00
	vi)	D-link internet switch 8port	each	4.00
	vii)	Crimping & connectors	LS	1.00
	vii)	Fitting , Installation charge per DVR & Camera	each	1.00
	NOTES:	Cat-6 data cable D-link extra as per require. Copper power cable is also extra as per required		
6.00	**AIR-CONDITIONING WORKS**			
		SPLIT Hi-WALL AC		
	a)	Providing and installation Blue Star 5HW18SA1 1.5 Ton without door rotary compressor having 5 Star Split AC has an energy rating of 5. It consumes 1500 W power input. The air conditioner is Split type and has a capacity of 1.5 Ton. Air Flow Direction Control, Horizontal Louvre / Vertical Swing: Motorised, Vertical Louvre / Horizontal Swing: Manual Tube Size and Piping Capability - Suction Tube Size Outer Diameter: 12.7 mm, Liquid Tube Size Outer Diameter: 6.35 mm, Maximum Piping Capability Total: 20 m, Maximum Piping Capability Vertical: 10 m, Refrigerant Additional Charge Beyond 3.66 m (g/m): 15. Night glow functions on remote control. Anti-freeze thermostat, memory feature. Noise level 38dB indoor.		
	i)	Supply of 1.5 TR Hi-wall split A.C. (Carrier/ Blue star-3star)	Each	16.00
	ii)	Installation charge for 1.50TR Hi-wall split A.C.	Each	16.00

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

	iii)	Supply, fitting & fixing of copper refrigerant pipe 5/8 & 3/4 between indoor unit to outdoor unit for A.C. machine	Rmt	325.00
	iv)	Supply, fixing of 25mm dia PVC drain for A.C. machine.	Rmt	325.00
	v)	Supply, fitting & fixing of 4-cre 2.50sqmm Electrical power cable for A.C.	Rmt	350.00
	v)	Supply, fitting & fixing of M.S. channel for A.C. machine.	Each	16.00
		WINDOW AC		
	b)	Providing and installation blue star 1.5 ton capacity window air conditioners with rotary compressor having 3 star energy consumption rating , remote control functioning .	Each	14.00

DETAILED SPECIFICATION REGARDING PERFORMANCE AND EACH KIND OF WORK SHALL BE REFERRED TO <u>ANNEXURE IV</u>

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

Hindustan Latex Family Planning Promotion Trust
B-14A, IInd Floor, Sector62, Noida, Gautam Budh Nagar, Uttar Pradesh-201307

Annexure-II: Financial Bid Format

We are hereby submitting the quotation for the Alteration and renovation work for 3rd and 4th floor at District Early Intervention Centre (DEIC) at Noida, after understanding completely the technical specifications and other terms and conditions of the RFP.

S. NO.	FINANCIAL
1.	Rates will be inclusive of GST IN/all Taxes/Levies/Packaging & Forwarding, Freight, etc.
2.	TDS as applicable will deduced as per Income Tax Act, 1961 if applicable.
3.	Payment will be made through cheque/NEFT/RTGS.
4.	Duly Certified bills along with completion report will be submitted.
5.	Payment will be released within 30 days after submission of invoice alongwith other supporting documents.
6.	Agency should be ready to fix or rework the alteration not complying with the specification without any extra cost.

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.
2. The form must be duly signed and sealed by the Authorised signatory
3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

Detailed list of renovation and alteration work and their Financial Bid

S.No.	AREA	DESCRIPTIONS	UNIT	QTY	Rate	Amount
1.0	**DEMOLITION / DISMANTLING**					
1		Demolishing/ Dismantling of toilets block including brick work, plaster, wall tiles cladding, tiles flooring, skirting, False ceiling and removing switches and sockets etc. completely manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge and as per revised architectural planning.	Each	10.00		
2		Dismantling doors, windows and clerestory windows (steel or wood) shutter including chowkhats, architrave, holdfasts etc. complete and stacking within 50 metres lead.	Each	60.00		
3		Removal of Plumbing/ Sanitary fittings, fixtures and plug inlets. Keep all CP fittings and Fixtures in store as per direction of Architects				
a)		W/C with CP fittings	Each	30.00		
b)		Bath Room CP fittings	Each	20.00		
c)		Counter's Basin with CP fittings	Each	20.00		
4		Debris removal altogether from site or as directed by Engg in charge for all levels, heights and leads complete.	per trip	10.00		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

2.0	CIVIL WORK				Rate	Amount
1		Providing and Laying 25-50mm average thickness Plain Cement Concrete 1:2:4 (1 cement: 2 coarse sand: 4 aggregate, 20mm and down gauge), tamped, spaded, trowelled and smooth finish.	Sqmt	RO		
2		Construction of Counter with Reinforced cement concrete in (M 20) 1:1½:3mix (1cement: 1½coarse sand: 3graded stone aggregate 20mm nominal size) including laying, curing, including the cost centering and shuttering and reinforcement complete as per design and drawings.	Cum	RO		
3		Providing and Applying Water-proofing treatment to Pantry, Washroom surfaces exposed to damp / drainage / direct rainfall etc., consisting of 4 coats of Tapcrete to floors and vertical sides upto 600mm High from finish floor as under. Allow for necessary curing and drying time of Each coat, including surface preparation, cleaning the existing flooring, covering the waterproofing by plastering on top and bottom, providing proper bonding keys in the coats where required and necessary curing, (plan area to be measured for rates)	Sqmt	355.71		
4		Providing and laying half brick partition wall with good quality bricks well burnt 1st class in cement mortar 1:4 (1 cement : 4 coarse sand) including providing 2 Each of 6mm dia MS round bars at every IV course including scaffolding, curing, raking out joints upto any height etc. complete as per direction of Site In-Charge or Architects.	Sqmt	239.59		
5		Providing and laying 12-15 mm thick cement plaster of mix 1 : 4 (1 cement : 4 sand with 50% coarse sand & 50% fine sand) to all type of RCC / brick surface in line and plumb, upto all height, curing including scaffoldings, providing wiremesh at all junctions of walls and ceilings etc. complete.	Sqmt	479.19		
6		Providing and applying 12 mm thick POP (Sakarni) punning on wall /ceiling including scrapping and hacking the existing finished surface and applying plaster of paris in proper line and levels including scaffolding etc. complete.	Sqmt	RO		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory

Name & Seal of the Firm/ Agency

Address:

Telephone/ Fax

3.0	INTERIOR WORKS:			Rate	Amount
a)					
1		**SYNTHETIC CARPET:** Providing and fixing Synthetic Flotex Carpet with rubberised based approved make, colour and design complete in all respect including fixing of carpet. Rates include cost of adhesives, fixing, cutting and welding of carpet etc. as per drawing and specification and direction of the Engineer in Charge.	Sqmt	40.60		
2		Providing and Laying 19mm thick. Granite stone of approved colour shade & size on RCC Toilet/ pantry/ Lab.as per drawing. Flooring pattern laid on 19mm thick cement mortar (1 cement:4 course sand)and joined with neat cement slurry mixed with matching colour pigment to match the shade of granite including polishing complete in areas as specified in drawing.	Sqmt	RO		
3		Providing & fixing double moulding Granite Counter in Lab/ Record over a BWR ply with areldite. Grouts to be matching the shade of granite including making holes for washbasin (over counter) including edge polishing and edge moulding as per Drawing and approved sample of moulding.	Sqmt	20.02		
4		Providing and Fixing Ceramic tiles of approved colour and 300X300 size in flooring pattern as per drawing, over 20 mm thick cement mortar 1 : 4 (1 cement : 4 coarse sand) and jointed with white cement slurry admixed with matching pigment to match the shade of tile. & Grouting and spacer to be included.	Sqmt	196.70		
5		Providing and Fixing Ceramic tiles of approved colour and size in wall cladding pattern as per drawing, over 12 mm thick cement mortar 1 : 3 (1 cement : 3 coarse sand) and jointed with white cement slurry admixed with matching pigment to match the shade of tile. & Grouting and spacer to be included.	Sqmt	153.31		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory

Name & Seal of the Firm/ Agency

Address:

Telephone/ Fax

6		Providing & Fixing 1.5 mm thk Vinyl flooring materials in Roll/ Tiles shall be confirming to IS 3462/86 approved make of ARMSTRONG /LG/ Wonder Floor including preparing the surface over the RCC / mojek / false floor with using suitable adhesive (Fevicol SR 505)approve shade as per the direction engineer in-charge	Sqmt	95.83		
7		Providing and Laying Polished Vitrified Floor Tiles (600 X 600) in Different sizes (thickness to be specified by the manufacturer) with water absorption's less than 0.08% and conforming to IS 15622 of approved make in all colours and shades,laid on 20mm thick cement mortar 1:4 (1 cement :4 coarse sand) including grouting the joints with white cement and matching pigments etc. complete as per drawing and specification and direction of the Engineer in Charge. Make of (World / R.K).	Sqmt	RO		
b)						
1		Supply & Installation of single glazed partition with a tested sound reduction property upto Rw 30dB single glazed partition with 10mm thick toughened glass. The panels are supported by natural anodized aluminium ground and ceiling profiles (AGGP) of 26x40mm (H) attached to the floor and suspended false ceiling. On the vertical edges the glass panels are wrapped around with 24x30mm Vertical profiles (AGVP). Certified proprietary factory finished Slim 'I' Profile is used for glass to glass joints. The glass to glass joints at the corners to have 90°corner Slim 90d profile and in the perpendicular glass junction T profile is to be used. Finishes of all aluminium frame components: Natural AEachdized Finished. Single Glazed Partition	Sqmt	RO		
2		Providing and fixing toughened glass door shutters with Frame: The Door opening shall be formed by 92x40mm aluminium door frames in natural anodized finished. It should have Single leaf Shutter of 40mm. The width of Door Frame will be 70mm with provisions for inserting glass and the glass used in the system shall be 12mm toughened Glass with necessary acoustic gaskets. Hardware: Dorma. Includes door closer, door stopper, handles, deadlock etc. complete .All fittings to be checked in a mock up sample before starting of work.	Each	RO		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory

Name & Seal of the Firm/ Agency

Address:

Telephone/ Fax

3		Providing and fixing Dorma / ENOX Automatic Sliding door system with sensor, ES 200 Easy 4.15 mtr operator for Double Sliding Profile System for 12 mm Glass for Structural opening Width of 3000 mm with Clear Passage width 2100 mm, and Clear Passage height 2550 mm, with 2 Each Sliding & 2 Each Fixed Panels with Seals & Floor Mounted Guide complete with all accessories as per the design. Consisting of Operator Profiles, Mechanical Components, Electrical Components including glass, fitting etc. complete	Each	2.00		
4		Providing and fixing white board of Alcon / White mark magnetic board with duster. size 4' X3'	Each	RO		
c)						
1		**WALL ACOOUSTIC FABRIC:** Providing & fixing Fibrecrete Acoustic Panels –Natural Standard ND40 in size: 595 x 595 x 20mm one side burl screw fixed @ 200mm on GI metal/ Wooden/ MS frame of 50 x 50mm making a grid of 610 x 610mm c/c. The frame is to be made in proper line after leveling. The panels will be backed with 50mm polyester Wadding 1000 GSM inserted inside the grid of 610 x 610mm. Panels will be covered by non-woven carpet of choice color & pattern pasted both side with adhesive and roller without allowing air bubble to form. Joints of the carpet should be overlapped while pasting and then cut with sharp blade in perfect line so that the joint is barely visible	Sqmt	120.00		
2		**CEILING ACOUSTIC:** Providing suspended ceiling with Fibrecrete Acoustic Tiles in size 595 x 595 x 15mm Natural Prime ND40 (White Colour). The tiles will be laid into the grid of size 600 x 600mm c/c of G.I pre coated (White) using Main T 34 x 24 & Cross T 24 x 24 & wall angles suspended suitably by dash fasteners, GI wire & suspension clip, butterfly & MS cleats. The entire framework should be in perfect level. The panels will be backed with 50mm polyester Wadding 1000 GSM inserted inside the grid of 610 x 610mm	Sqmt	45.00		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

3		**GYPSTEEL ULTRA STUD PARTITION:** Providing and fixing 98mm thick Gypsteel ULTRA stud partition which includes Single layer of tapered edge 13mm thick. Gyproc Duraline (conforming to EN 520:2004, Type D,F,I & R) is screw fixed with Gyproc Drywall, Screws of 25mm at minimum spacing of 300mm. at centre and 150mm at periphery of wall to either side of 70mm Gypsteel ULTRA C stud (0.5mm thick having one flange of 34mm and another flange of 36mm made of GI Steel) placed at 610mm centre to centre in 72mm Gypsteel ULTRA® floor and ceiling channel (0.5mm thick have equal flanges of 32mm made of GI steel), which is anchored to the floor & true ceiling using HILTI HLC 8X40/HILTI X-GN20MX anchor fasteners at 600mm c/c in zigzag manner. Stud and floor channel are crimped together with crimping tool.	Sqmt	222.50		
		A Gypsteel ULTRA noggin channel of 70mm width (0.5mm thick having two flanges of 40mm each) has to be provided at the horizontal joints of the two boards screw fixed to the studs using Gyproc Metal to Metal flat head screws. The boards are to be fixed vertically to the framework with joints staggered to avoid leakage through joints. 25x25x0.5mm Gyproc angle bead should be used at all L-Junctions of partition. Finally square and tapered edges of the boards are to be jointed and finished so as to have a flush look which includes filling and finishing with Gyproc Pro-Fill Jointing compound, Gyproc Joint Paper tape or fiber tape (as per recommended practices of Saint- Gobain Gyproc India Ltd). The junction of the partition with masonry & all penetration through the partition has to be treated with Hilti/Pyroplex fire and acoustic sealant. All other detailing and specifications to be followed as per approved drawing of Gyproc.				
d)						

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

1		GYPSUM BOARD CEILING : Providing and fixing at all heights false ceiling including providing and fixing of frame work made of special sections power pressed from M.S. sheet and galvanized in accordance with zinc coating of grade 350 as per IS: 277 and consisting of angle cleats of size 25mm wide X1.6mm thick with flanges of 22 mm and 37mm at 1200mm centre to centre one flange fixed to the ceiling with dash fastener 12.5mm diaX40mm long with 6mm dia bolts to the angle hangers of 25X25X0.55mm of required length, and other end of angle hanger being fixed with nut and bolts to G.I channels 45X15X0.9mm running at the rate of 1200mm centre to centre which the ceiling section 0.5mm thick button wedge of 80mm with tapered flanges of 26mm each having clips made out of 2.64mm diaX230mm long G.I wire at every junction including fixing the gypsum board with ceiling section and perimeter channels 0.5mm thick 27mm high having flanges of 20mm and 30mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450mm centre to centre with 25mm long drive-all screws@230mm interval including jointing and fixing to a flush finish of tapered and square edges of the board with recommended filler, jointing tapes, finisher as per manufactures specification and also including the cost of making openings for lights fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed all complete as per drawing and specification and direction of the Engineer in Charge. (All G.I. steel sections make Saint Gobain Makes)				
i)		Rooms (Repair works)	Sqmt	35.00		
ii)		Toilets	Sqmt	196.70		
iii)		Reception	Sqmt	34.97		
iv)		Early Intervention room	Sqmt	35.13		
v)		Play and Intervention Area	Sqmt	55.48		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

2		Armstrog False Ceiling: Providing and fixing False Ceiling Tiles of approved materials of size 595X595 mm in true horizontal level suspended on inter locking metal grid of hot dopped galvanized steel sections(galvanized @170 gsm/sqm.) consisting of main "T"runnre suitably spaced at joints to get required length and of size 24X38 mm made from 0.30mm thick (minimum) sheet spaced at 1200mm center to center and cross "T" of size 24X25mm made of 0.30mm thick(minimum) sheet, 1200mm long spaced between main "T" at 600mm center to from a grid of 1200X600 mm and secondary cross "T" of length 600mm and size 24X25 made of 0.30 mm thick (minimum) sheet to be interlocked at middle of the 1200X600mm panel to from grids of 600X600mm and laying false ceiling tiles of approved texture in the grid including, wherever, required, cutting / making. Opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc. Main"T" runners to be suspended from celling using GIslotted cleats fixed to ceiling with 6mm dia and 50mm long dash fasteners, 4mm GI adjustable rods with galvanished level center to center along main T, bottom exposed width of 24mm of all T-sections shall be pre-painted with polyester paint, all complete at all heights as per specifications drawings and as directed by Engineer-in-Charge. (All G.I. steel sections make Saint Gobain Makes)				
i)		Rooms (Repair works)	Sqmt	35.00		
3		**Cove:** To be formatted out of MS tube fabricated structure in design & profile given by the architect. The chicken/expanded metal wire mesh to be welded/ screwed to frame to Format a net to receive POP. OR To be formatted out of ceiling sections, wooden frames and gypboard with curvatures or cove light sections in for of suspended ceilings. The rate shall include profile of Cornices, Molding, Light fitting & A/c grills.	Rmt	50.00		
4	METAL CEILING IN TOILETS	Providing and fixing in position Suspended ceiling System with Aluminum Metal ceiling tiles in size 600x600 with 16x8 mm regular edge profile. These will be installed by clip-in system. Plain white powder coated tiles with NRC=0.1 and sound attenuation of 44dB. Suggested Brand: Arm strong, Orcal planks as per approval or equv, & clip on system. Eachte: Total area shall be taken under the Ceiling including Lights and Diffusers shall be taken for measurements.	Sqm	RO		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

5	TRAP DOOR	Repairing of trap door in false ceiling made of "Novapan board, dead locks, lipping all around including all hardware, angles, hinges etc. complete as per design and drawing. Extra paneling of ceiling board (Plain / Perforated) on the Novapan board	Each	12.00		
e)						
1	JANITOR CLOSET	Providing and fixing Janitor Closet 450mm deep comprising of caracas and shutters constructed from 20mm thick BWP finished in 1mm thick laminated shutter 200x200 ceramic tile cladding all inside surfaces, one number shelf cladded with 200x200 ceramic tile on all side including BW lipping and surround etc. Rate should be inclusive of necessary hardware handle, Lock sets, self-closing hinges, latch inside all cabinet hardware approved by the Architect. Cost of laminate Rs. 325/- per Sqm. The rate to include Sink with counter, all plumbing connections for the same.	No.	2.00		
2	VANITY COUNTERS	Providing and fixing in position wash basin/ vanity counter of overall size 1480mm x 600mm x 875mm as per detail in drg. No. GRB2 (DT-). It shall be made out of 19mm thick marine ply. 16mm thick GRANITE, shall be fixed on top facia and back splash. The job shall be include making eased, moulded and polished edge, cutting hole for basin, etc. complete. Bottom open shelve box shall be made out of bwr ply and oak veneer lining in it. Edge to have lipping.	SQ.M	RO		
3	RECEPTION	Reception Table made with Ply Board / MDF with lacquered glass band as per drawing and corian finish on top and front. Storage cabinet provided on the side and drawer system below	No.	1.00		
f)						
1	**NEW DOOR FRAME**	P/F. Charp wood (75mmx63mm) doors frame in the position with Steel screws for door to frame as directed, providing necessary mouldings in frames as required/as per drawing i\c. painting of surfaces coming in contact with walls etc. with preservative (of approved quality) complete as per drawing and specification and direction of the Engineer in Charge.				

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

	i)	Hard wood (Charp) as approved by the Architect.	Cum	0.43		
2	**FLUSH DOOR SHUTTERS**					
a)	NEW FLUSH DOOR SHUTTER	Providing and fixing Internal Toilet doors of 40mm thick flush door construction in block board of commercial grade with 6mm thick teakwood lipping on all exposed edges including. Vertical surfaces to be finished in laminate from both the side of the toilet and 300mm ht SS sheet fixed at bottom inside face including all door fittings as per approved makes.				
	i)	TOILETS (900X2100)	Sqmt	10.00		
	ii)	WC(750X2100)	Sqmt	RO		
b)	NEW FLUSH DOOR SHUTTER	Providing and fixing Internal doors of 40mm thick flush door construction in block board of commercial grade with 6mm thick teakwood lipping on all exposed edges including provision of a vision panel 150mmX150mm with 3mm thick clear floated glass fixed with beading all around. Vertical surfaces to be finished in laminate from both the sides including all door fittings as per approved makes.				
	i)	PANTRY SLIDING SHUTTER (900X2100)	Sqmt	9.00		
	ii)	ROOMS (900X2100)	Sqmt	24.00		
	iii)	ROOMS (1500X2100)	Sqmt	10.00		
3	Old door with Single shutter	Refixing Internal Toilet doors of available at site in good condition. Repairing flush door including vertical surfaces to be finished in laminate from both the side of the door shutter and moulding with adhesive, SS sheet fixed over door shutter up to 300mm ht from bottom inside face including all door H/W. fittings as per approved makes complete in all respects as per drawing and Architects.				
	I)	WC	Each	16.00		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory

Name & Seal of the Firm/ Agency

Address:

Telephone/ Fax

4	**WINDOWS**					
	1	Providing and fixing Powder coated aluminium, with extruded built up standard tubular and other section of approved make conforming to IS: 733 and IS: 1285, powder coating to required shade. (minimum powder coating of 50 micron), fixed with rawl plugs and screws or with fixing clips, or with expansion hold fasteners including necessary filling up of gaps at junctions at top bottom and sides with required PVC/ neoprene felt etc. Aluminium section shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle. Aluminium U/ snap beading for glaing/ paneling, C.P. brass/ stainless steel screws, all complete in all respects as per drawing and Architects.				
		Using 10mm ST-420 Toughened Glass + 12mm Air Gap +10mm clear Floated Toughened using window Frame EURO Groove 46mmX50mm Outer Frame and 66mmX50mm Mullion (Yentana Series)				
a)		For Fixed Portion	Sqmt	RO		
b)		Extra for Openable	Sqmt	RO		
	2	Double Toughened Glass + 8mm Air Gap +6mm clear Floated Toughened using window of approved makes powder coated aluminium window for observation room as mentioned in the drawing as follows: Outer Frame wt .43 kg/rmt, U Clip Beading Section wt .199kg/rmt .	Sqmt	4.58		
g)						
1	3M Projection Cum Writing Film	Supply & Installation of 3M PWF-500 film for projection cum writing. The film should have a gloss finish and grey adhesive for good hiding power and will be applied on a flat surface with clean, dry, very smooth and non-porous surfaces. The use of xylene free markers is recommended for writing and the use of a soft lint free towel such as 3M Scotch Brite microfibre cloth is recommended for cleaning the film. The film can be cleaned occasionally with mild detergent and water if required.	Sqmt	10.00		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

2	3M Di-Noc Chalk board film	Supply & Installation of 3M Di-Noc Architectural Surface Finishes, Self-adhesive, bubble-free installation to be done on a smooth, dust free putty surface that has a coat of oil-based primer, by 3M Authorised Installers only. The surface should be able to serve the purpose of a chalk board.	Sqmt	10.00		
3	3M Printable Vinyl	3M white vinyl in white color with matte or gloss surface, with thickness of 10 mils recommended for flat or simple curved surfaces. Can be pasted on metal, painted or rigid PVC. With suitable over laminate for protection of graphic				
i)		IJ 1220	Sqmt	120.00		
iv)	LG printable vinyl	White or Gloss Over laminate	Sqmt	RO		
6		Providing & fixing in position wall paper as per detail in FFE & drg. The job shall be done as per manufacturer's specification. The job shall also include making base with putty & primer.	Sqmt	RO		
7		P/A 2 or 3 coats of roller finish. Acrylic emulsion paint- ICI or equiv. of approved colour complete with all base work preparation.	Sqmt	820.00		
8		P/A 2 or 3 coats of roller finish, ICI Velvet touch or equivalent. in dark colours	Sqmt	RO		
9		P/A 2 or 3 coats of Texture Paint in SKK / Bell Art or equivalent in grey colour	Sqmt	RO		
10		Providing and Fixing Blackout film in Eye OPD and Audiometry room of Birla 3M 150 micron fixed as/suppliers specifications and pattern given by Architect.	Sqmt	56.28		
h)						
1	Table side Storage	Providing and fixing overhead 600mm height 375mm deep out of 19mm thick ply with shutters finished in laminate on both sides mounted on hinges. 1mm thick laminate on outer surface and 0.8mm thick on all inner surface, inclusive all necessary fittings. Complete in all respects.	Sqm	14.66		
2	Over Head Storage	**Over Head Storage:** Providing and fixing overhead 600mm height 375mm deep out of 19mm thick ply with shutters finished in laminate on both sides mounted on hinges. 1mm thick laminate on outer surface and 0.8mm thick on all inner surface, inclusive all necessary fittings. Complete in all respects.	Sqm	10.17		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

3	Under counter storage	**STORAGE UNDER COUNTER:** P/F of storage below the counter 750 depth in 19mm thick water proof commercial ply with 12mm ply backing. The horizontal and vertical divisions as / detailed approved drawings. The edges of the shutters will have 2mm thick pvc edge binding tape. The handles will be stainless steel as / approved and shutters will be on autoclosing hinges. All inside surfaces will be laminated finish and shutters too will be laminate finish.	Sqmt	12.56		
4	Cabinets for Record Room	Providing and Fixing full height cabinets for Record Rooms of depth 375mm and height 2100mm with 4.5mm thick clear floated Modi Guard glass shutter above 750mm and below 19mm thick shutter. 19mm thick water proof commercial ply with 12mm ply backing. With lockable arrangements. The horizontal and vertical divisions as / detailed approved drawings. The edges of the shutters will have 2mm thick pvc edge binding tape. The handles will be stainless steel as / approved and shutters will be on auto closing hinges. All inside surfaces will be laminated finish and shutters too will be laminate finish.	Sqmt	43.18		

i)	**LOOSE FURNITURE**				**Rate**	**Amount**
	TABLES					
1	**Cabin Table** 	**Executive Cabin Table: 1500 Wide x 900Depth x 750HT Side Panel:** 1500Wide x 400Depth x 660HT **Table Top:** Made of 25mm Thick OSL particle board with matching PVC edge banding. **Gable End:** Made of 25mm thick BSL particle board with matching PVC edge banding. **Modesty Panel -** 1200 x 450HT 18mm Thick BSL Particle board Modesty Panel. **Wire Management** (optional): Grommet / bilkin type socket Data / Vertibra. **Screen:** Made of 25mm BSL particle board with PVC Lipping **Storage:** Made of 25mm thick OSL particle board with openable shutters, All storage will support with screens. Storage top & side are UV coated Laminate with scratch resistance.	Each	11.00		

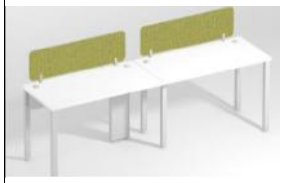
Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

		Executive Cabin Table : 1500 Wide x 750Depth x 750HT SIDE CREDENZA : 1200Wide x 450Depth x 750HT Specifications Table Top - 25mm thick Pre Lam particle board with 2mm edge lipping on all exposed sides Support - Supported on 25mm thick Pre- Laminated Particle Board Gable ends & 18mm Thick Pre-Laminated Particle Board Modesty Panel with suitable spacers & Levelers. SSTORAGE UNITS: The structure is made out of 18mm Thick Pre-Laminated Particle Board. The Shelves are adjustable in height. The shutters are fitted with auto closing hinges. Recessed Aluminum handles, central locking system, levelers & other necessary hardware are provided.	Each	RO		
2		**PRODUCT - LINEAR TYPE WORKSTATION (PERFORM)Data Op/Anthropometrical Room SIZE : 1200 x 600 x 750HT Specifications: Main Screen -** 12 MM Thick fabric magnetic screen having size 1050x350mm **Table top -** PLB 25mm thick pre-lam particle board finished with 2mm PVC edge banding. **Under-structure -** Supported on ms powder coated sq. 50x50 straight perform legs with ms powder coated cross beam 40x20. **Wire Management -** 65 dia wire manager hole per workstation. **Raceway -** 250mm HT, 70mm thick raceway with laminated fascia is provided & vertical wire entry is considered.	each	5.00		
		**PRODUCT - LINEAR TYPE WORKSTATION -Orthopedic OPD SIZE : 1050 x 600 x 750HT Specifications: Main Screen -** 12 MM Thick fabric magnetic screen having size 900x350mm **Table top -** PLB 25mm thick pre-lam particle board finished with 2mm PVC edge banding. **Under-structure -** Supported on ms powder coated sq. 50x50 straight perform legs with ms powder coated cross beam 40x20. **Wire Management -** 65 dia wire manager hole per workstation. **Raceway -** 250mm HT, 70mm thick raceway with laminated fascia is provided & vertical wire entry is considered.	each	1.00		

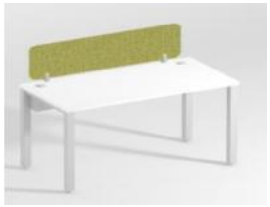
Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

3						
		**PRODUCT - LINEAR TYPE WORKSTATION Eye SIZE : 1050 x 750 x 750HT Specifications: Main Screen -** 12 MM Thick fabric magnetic screen having size 900x350mm **Table top -** PLB 25mm thick pre-lam particle board finished with 2mm PVC edge banding. **Under-structure -** Supported on ms powder coated sq. 50x50 straight perform legs with ms powder coated cross beam 40x20. **Wire Management -** 65 dia wire manager hole per workstation. **Raceway -** 250mm HT, 70mm thick raceway with laminated fascia is provided & vertical wire entry is considered	Each	1.00		
		**PRODUCT - LINEAR TYPE WORKSTATION Dentist Room SIZE : 1500 x 600 x 750HT Specifications: Main Screen -** 12 MM Thick fabric magnetic screen having size 900x350mm **Table top -** PLB 25mm thick pre-lam particle board finished with 2mm PVC edge banding. **Under-structure -** Supported on ms powder coated sq. 50x50 straight perform legs with ms powder coated cross beam 40x20. **Wire Management -** 65 dia wire manager hole per workstation. **Raceway -** 250mm HT, 70mm thick raceway with laminated fascia is provided & vertical wire entry is considered.	Each	1.00		
		PRODUCT - BOARD ROOM TABLE Size: 4800 x 1050 x 750HT Specification: Table top - PLB 25mm thick pre-lam particle board finished with 2mm PVC edge banding. **Under-structure** - Supported on 25mm thick PLT gable end & 18mm thick PLT modesty. **Wire Management -** 4 nos. of MS Flip up 450mm without switch & socket, ABS cable dump, vertical wire entry cover are considered.	Each	1.00		
		PRODUCT - PLB MOBILE PEDESTAL (2D+1F) Size - 400L x 450D x 640HT. Specifications : Made of 18mm thick PLB with 2 Drawer +1 Filling unit arrangement, Castors are provided for easy mobility of the pedestal, Suitable recessed handles, Locking system & other necessary hardware are provided	Each	15.00		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

4	**CHAIRS**	Providing and laying chairs to be of 25mm Stainless Steel pipe frame and seats to be in wood fall upholstered seat and back of finishing in fabric / leatherite as per approved colour and fabric / letherite, including PP Base for stability, Heavy duty double wheel castors.				
		Doctors chair	Each	11.00		
		In front of doctor patient chairs	Each	22.00		
		Board Rm table's chairs	Each	14.00		
		Board Rm chairs except table	Each	10.00		
5		Chairs to be of 25mm Stainless Steel pipe grade 304 frame and seats to be in wood full upholstered seat and back of finishing in fabric / leatherite as per approved colour and fabric / letherite, including PP Base for stability, Heavy duty double wheel castors.				
	i)	Single Seater Visitor chair	Each	3.00		
	ii)	2-Seaters visitor chair	Each	9.00		
	iii)	3-Seaters visitor chair	Each	13.00		
	iv)	Workstation	Each	4.00		
	v)	Reception chair	Each	2.00		
6	**SOFA**	Providing and laying, Sofa in leatherite Semi Premium Quality for Reception area Seating as per architectural drawing and design.	Each			
		Waiting area Chairs (tandem Pu) Featherlite make in brushed aluminum finish	each	10.00		

j)	**CHILDREN FURNITURE**					
		Providing and Fixing cabinets for Toys / books in Sensory garden area and Early Intervention Occupation therapy	Sqm	20.00		
		Decorative shelves in each OPD for display of stuffed toys	per	20.00		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

		Loose furniture in Occupational Therapy, Waiting area and Sensory Garden. (can be directly procured by DEIC) as per Architects design and layout	Nos			
k)	**MISCELLANEOUS WORK**					
1		Providing and fixing 3D MDF designed cutout on wall. MDF prevented with pressing1imm thick veneer from face and back to prevent curl. To fixed in position bettens or studs at 600C/C around periphery with good quality adhesive and countersunk SS screws. MDF finished with DECO paints completed in each room as per direction of architects and as per design and drawings.	Sqmt	100.00		
2		Providing and fixing 6mm thick fundarmax 450mm high on existed staircase railing to secure misshaping from Ground floor to Fourth floor with the SS screw or SS nut and bolts etc., as per design, drawing and direction of architects. Panels are high pressure laminated panels composed of cellulose fibers impregnated with synthetic resin and are manufactured. The panels have a mean dry density of 1400 kg·m–3 and a mean water absorption value of less than 2%, in accordance with BS EN 438-2 : 2005	Sqmt	15.10		
3		**STERILIZED BASIN:** 2-Stations Surgical Sink is made of grade #304 stainless steel and measures 1400 x 560 x 870. It features mirrors and a splash proof taps are a knee-touch switch and a supply of soap or liquid, as well as automatic heating, scrubbing, and drying equipment model No. JDTXS-312 JNG DONG makes.				
		For Sterilization Sink and Orthopedic Sink	Each	2.00		
4		**SIGNAGE**				
a)		Providing and fixing signages of required size and colour. 5mm thick clear cast acrylic vinyl cut and paste along with Stainless steel spacers. List of doctors with designation.				
	i)	Signage 36"X60"	Each	1.00		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

		Providing and fixing signage of required size and colour with aluminium frame 3mm sunboard along with vinyl print 15"X5" (Name plate for Dr./ department.				
	i)	Signage in front of doors	Each	41.00		
	ii)	Signage for direction	Each	6.00		
c)		Providing and fixing signages of required size and colour with display acrylic box with aluminium frame along with 4 hours battery backup of lighting.				
	i)	Signage for Fire Exit/ Staircase/Lift etc.	Each	8.00		
	ii)	Signage at staircase entry (18"X48")	Each	1.00		
5		**VERTICAL BLINDS:**				
	a)	Providing and fixing **Remote controlled Horizontal / Vertical blinds** (Inspection rooms) of Make- MAC / Vista Levellers / Equivalent as per approved sample. Rollershades- automatic drive system in windows with moulded plastic with steel rectangular support pin and inserted into the tube end drive unit assembled in end plug, support brackets, roller tube, bottom rail, fabrics etc. all complete including operation guarantee. (Remote Controlled Drive Unit cost Extra)	Sqmt	RO		
	b)	Remote controlled unit	each	RO		
	c)	Providing and fixing **Manually Drive Horizontal / Vertical blinds** (Dr. Rooms) of Make- MAC / Vista Levellers / Equivalent as per approved sample. Rollershades- chain drive system in windows with moulded plastic with steel rectangular support pin and inserted into the tube end manually drive unit assembled in end plug, support brackets, roller tube, bottom rail, ball chain etc. all complete including operation guarantee.	Sqmt	95.23		
4.00	**PLUMBING/SANITARY WORKS:**					
a)	**TOILETS WORKS**					

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

i)		P/F 12mm thick Toughened Glass separators for Urinals with 3M Frosting Film as per Drawing Fixed to the wall with SS Pipes and other fitting hardware as shown in drg.	Each	4.00		
ii)		P/F Mirror panelling with cove light provision on all four sides. The panelling shall be done in bwr ply framework with necessary provisions for cove for fixing LED based lightstrip. The 6mm mirror shall then be pasted with appropriate silicon based adhesive and shall have bevelled edges. the edge of the ply shall be pasted with edge band tape - in Toilets	Each	4.50		
iii)		Rectangular framed mirrors of size 1'-3"x1'-6" in consultant rooms and Toilets	each	11.00		
b)	**GLAZED VITREOUS CHINA SANITARY WARE FIXTURES**					
i)		P/Fixing white vitreous china wall hanging European type water closet with CP bolts, nuts, CI Chair or other hanging arrangement with dual concelled flushing cistern with internal fittings, white solid plastic sheet and cover with lid, CP brass hinged rubber buffers with accessories, CI/ MS brackets painted with two coat of primer, CP brass screws and wooden cleats including cutting and making good the wall and floors wherever required.	Each	RO		
ii)	**Refixing W/C**	Fixing white vitreous china European type water closet with CP bolts, nuts, CI Chair or other hanging arrangement with dual flushing cistern with internal fittings, white solid plastic sheet and cover with lid, CP brass hinged rubber buffers with accessories, CI/ MS brackets painted with two coat of primer, CP brass screws and wooden cleats including cutting and making good the wall and floors wherever required.	Each	16.00		
iii)		P/Fixing white vitreous china wash basin of size 58x43 cms for above counter mounting, 32mm C.P.waste, 32mm dia cast brass bottle trap/P trap and connection pipe to wall with C.P. wall flange and rubber adopter for waste connection, complete including cutting and making good the walls, wherever required.	Each	16.00		
iv)		P/Fixing white vitreous china wash basin of size 58x43 cms for above counter mounting, 32mm C.P.waste, 32mm dia cast brass bottle trap/P trap and connection pipe to wall with C.P. wall flange and rubber adopter for waste connection, complete including cutting and making good the walls, wherever required. (Basin for Doctors room)	Each	10.00		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

v)	**Refixing Basin**	Fixing white vitreous china wash basin of size 58x43 cms for above counter mounting, 32mm C.P.waste, 32mm dia cast brass bottle trap/P trap and connection pipe to wall with C.P. wall flange and rubber adopter for waste connection, complete including cutting and making good the walls, wherever required.	Each	20.00		
vi)	**Urinals with water used**	P/Fixing white vitreous china flat back urinal With semi stall with Electrical Operated Sensor of with C.I. hangers, 15mm dia spreaders, 32mm dia C.P. brass domical waste, 32mm dia cast bottle trap, and connection pipe to wall with C.P. flange, complete including cutting and making good the walls and floors wherever required.	Each	4.00		
vii)	**Urinal without water used**	P/Fixing without water white vitreous china flat back urinal with semi stall with Concealed brackets painted with two or three coats of enamel paint of approved shade over a coat of primer, C.P. brass spreader, 32 mm dia C.P. brass waste, 32 mm dia C.P. brass bottle trap and pipe upto wall with C.P. brass flange complete in all respects, including cutting holes in brick masonary and R.C.C. and making good the walls and floors wherever required. (HINDWARE MAKES)	Each	RO		
c)	**WATER SUPPLY FITTINGS**					
i)		P/F. Mini Waste paper basket in SS perforated sheets of approved make in SS brushed finish. (Dream Kraft or equivalent make).	Each	16.00		
ii)		P/F. Mini Waste paper basket (WC) of Kimberly Clark/ Dream Craft make or equivalent make.	Each	8.00		
iii)		P/F. Wall mounted paper towel dispenser of Kimberly Clark/ Dream Craft make or equivalent make.	Each	16.00		
iv)		P/F. Liquid soap dispenser of Kimberly Clark/ Dream Craft make or equivalent make.	Each	8.00		
iv)		P/F. SS grab bar for handicapped toilet as per drawing of Kimberly Clark/ Dream Craft make or equivalent make.	Each	8.00		
v)		Providing & Fixing EH27NW stainless steel automatic hand dryer wall mounted touch free infra-red activation of Kimberly Clark make including cutting and making good the walls wherever required complete as directed by Engineer in charge.	Each	8.00		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

vi)		Providing & Fixing toilet paper holder with Flap including cutting and making good the walls wherever required complete as directed by Engineer in charge.	Each	8.00		
vii)		P/Fixing 15mm C.P.brass angle valve with C.P copper connecting pipe 375mm long and nuts, washer with C.P. brass flange complete, including cutting and making good the walls, wherever required.	Each	90.00		
viii)		P/Fixing CP brass single lever wash basin deck mounting mixer with pop up waste complete including cutting and making good the walls where required.	Each	26.00		
ix)		Providing & Fixing C.P. brass cast twin coat hooks fixed to wall/door with wooden cleats and S.S screws including cutting holes in wall and making good the wall wherever required.	Each	26.00		
x)		P/Fixing of C.P brass air purifier container, fixed to wooden cleats with C.P brass screws, complete including cutting and making good the walls wherever required	Each	16.00		
xi)		P/Fixing CP brass Health faucet with PVC Flexible Tube with wall hook including angle valve etc. complete	Each	16.00		
xii)		Providing and fixing 125 mm C.P. grating of approved quality.	Each	25.00		
xiii)		Providing & Fixing, Installation and testing15mm dia C.P. brass long body bib tap with C.P. brass threaded wall flange complete including cutting holes & making good the wall wherever required complete as directed by Engineer in charge..	Each	2.00		
xiv)		Providing and fixing 5mm thick mirror of superior glass (of approved makes , quality) and of required shape and size with SS Studs and with 6mm waterproof hard board backing.	Sqmt	5.50		
xv)		Providing and fixing coloured solid PVC plastic seat and cover in European type WC pan.	Each	16.00		
xvi)		Providing & Fixing, Installation and testing15mm dia C.P. brass concealed stopcock with C.P. brass threaded wall flange complete including cutting holes & making good the wall wherever required complete as directed by Engineer in charge..	Each	8.00		
3		**GYSER:**				

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

		Providing and Fixing Gyser (of approved makes) of following capacity with nuts and bolts grouted in wall with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate), connection to inlet and outlet pipes complete including cutting and making good the walls wherever required in all respect.				
	a)	15 liters capacity (Havells Manza EC-5S)	RO	Each		
	b)	25 liters capacity (Havells Manza Slim)	6	Each		
	c)	50 liters capacity (Havells Manza Slim)	RO	Each		
4	**Pantry**					
i)		P/F. Waste paper basket Perforated bin capacity 7 Ltr. of Kimberly Clark/ Dream Craft make or equivalent make.	Each	RO		
d)	**PLUMBING/ SANITARY WORKS**					
1		Providing and fixing uPVC SWR pipes Type A including all fittings with or without access i.e. bends, junctions, cowls, offsets, etc. of approved makes, and jointing with solvent cement and excavation, concreting all around pipe with M15 including curing, refilling and disposal of surplus earth, including cutting wall and making holes in walls and floors, wherever required and making good the same, complete as directed by the Engineer-in-Charge.				
a)		160 mm dia	Rmt			
b)		110 mm dia	Rmt	105.00		
2		Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of clamping and making good the same including testing of joints complete as per direction of Engineer in Charge.				
a)		20 mm OD	Rmt	225.00		
b)		25 mm OD	Rmt	45.00		
c)		32 mm OD	Rmt	35.00		
d)		40mm OD	Rmt	RO		
e)		50mm OD	Rmt	75.00		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

3		Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge. Concealed work, including cutting chases and making good the walls etc.				
a)		20 mm OD	Rmt	RO		
b)		25 mm OD	Rmt	RO		
c)		32 mm OD	Rmt	RO		
d)		40mm OD	Rmt	RO		
e)		50mm OD	Rmt	RO		

5.00	**ELECTRICAL WORKS**					
	a)	**POINT WIRING:**				
	1	Wiring for lights, fans, utility outlets in concealed/ surface manner as directed using 3x1.5sq.mm (P,N+E) FRLS PVC insulated multi-stranded copper conductor wires in 2mm wall thickness PVC conduit including MS junction boxes, pull boxes, pvc closer / bushing, proper saddling at every 1500mm intervals in case of surface piping, galvanized switch boxes (16G), connector, including 2x2.5 + 1x1.5 sq mm (P,N+E) circuit wire from DB to switch box any length complete with 6A modular switches and blinkers as specified: (Only Eight to Ten Point per circuit.)				
	i)	Wiring as above item no 1.00 for ceiling /wall/ point controlled by a 6A switch.	Each	16.00		
	ii)	Wiring as above item no 1.00 but for additional point controlled by existing 6A switch.	Each	RO		
	iii)	Wiring as above item no 1.00 but for two way light point controlled by 2nos 2way 6A switch.	Each	RO		
	iv)	Wiring as above item no 1.00 but for ceiling fan point including modular type steps fan regulator, fixing of fan hook in the slab.	Each	RO		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

	v)	Wiring as above item no 1.00 but for wall mounted exhaust/ cabin fan including supplying and fixing 3 pin 6A socket near the outlet for portable connection and a 6A switch housed in a separate switch box.	Each	43.00		
	vi)	Wiring as above item no 1.00 but for 3 pin 6A switch socket including supplying and fixing 3 pin 6A switch and socket outlet box and plate.	Each	144.00		
	vii)	Wiring as above item no 1.00 but for 6pin 6/ 15A plug socket with 2x4 sq.m. PVC insulated copper wire including earthing the third pin with 1.5 sq.mm pvc insulated copper earth wire and supplying & fixing 6 pin 5/15A switch and socket.	Each	128.00		
	viii)	Wiring as above item no 1.00 but for 25A plug for A/C with 2x6 sq.mm pvc insulated copper wire including earthing the third pin with 1.5 sq.mm PVC insulated copper earth wire and supplying & fixing 3 pin 25A socket, & 25A switch in MS box. (Only one power plug per circuit)	Each	25.00		
	b)	**MAINS AND SUB-MAINS:**				
	1	Wiring for mains and sub-mains in a concealed/ surface manner using PVC insulated copper wires in 2mm wall thickness PVC pipe with continuous run of copper earth wire, necessary junction boxes, pull boxes, checknuts, etc. as detailed below:				
	a)	With 4 x 16sq.mm PVC insulated copper wires in 40mm dia conduits including 2x4sq.mm PVC insulated copper earth wire.	Rmt	RO		
	2	Supplying and laying heavy duty 1100Volt grade PVC insulated PVC sheathed armoured cable with aluminium conductors of the following sizes including providing and fixing of necessary cable clamps on wall/ ceiling/ trench as required:				
	a)	4 x 25 Sq.mm cable	Rmt	100.00		
	b)	3.5 x 50 Sq.mm cable	Rmt	RO		
	c)	3.5 x 95 Sq.mm cable	Rmt	RO		
	3	Making cable terminations with all materials required including glands, nuts, bolts PVC tape, crimping lugs etc. complete as required for the following sizes:				
	a)	4 x 25 Sq.mm cable	Each	16.00		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

	b)	3.5 x 50 Sq.mm cable	Each	RO		
	c)	3.5 x 95 Sq.mm cable	Each	RO		
	c)	**<u>DUMMY PIPE FOR COMMUNICATION & P.A. SYSTEMS:</u>**				
	1	Providing and laying the following sizes and types of dummy pipes for telephone and television systems complete with necessary junction boxes, pull boxes, 18G GI pull wire as required with all bends and saddles provided in case of surface pipes:				
	a)	25mm dia PVC pipe	Rmt	100.00		
	b)	32mm dia PVC pipe	Rmt	RO		
	2	Providing and fixing appropriate NorthWest cover plates with RJ 11 type outlet for telephone including 18G galvanized MS boxes.	Each	33.00		
	3	Supplying and drawing 0.61sq.mm ATC wire for telephone system of the following sizes in existing pipes:				
	a)	2 pair cable	Rmt	100.00		
	b)	10 pair cable	Rmt	200.00		
	4	Supplying, fixing, connecting and commissioning following sizes of telephone tag boxes with Krone type tag blocks in 16G MS box duly painted with hinged cover:				
	a)	10 pair tag box	Each	33.00		
	5	Supplying, fixing, and connecting AMP / MOLEX RJ 45 (MPS100) port for computer Data outlet complete with 16 gauge MS galvanized box, matching face plate as required.	Each	32.00		
	6	Supplying and laying AMP / MOLEX Cat. 6 cable for data networking in existing conduit / raceway.	Rmt	150.00		
	7	Supplying and laying 110 mm dia 6Kg PVC pipe including digging refilling, jointing etc as required.	Rmt	RO		
	d)	**<u>DISTRIBUTION BOARDS:</u>**				

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

	1	Supplying and fixing, connecting, testing and commissioning the undermentioned recessed Metal sheet double door type DB's with insulated copper bus-bars, neutral links, and earth terminals, all enclosed in 16G MS box complete with hinged metal covers interconnections, bonding, to earth, painting and labelling as required with MCBs mounted phase wise in three tiers:				
	a)	**4WAY TPN LIGHT & POWER DB**				
		Incomer:-				
		1no 40A TPN MCB				
		Outgoing:				
		3nos 40A DP ELCBs 100mA				
		12nos 6/10/16A SP MCB	Each	RO		
	b)	**6WAY TPN LIGHT & POWER DB**				
		Incomer:-				
		1no 63A TPN MCB				
		Outgoing:				
		3nos 63A DP ELCBs 100mA				
		18nos 6/10/16A SP MCB	Each	2.00		
	2	**BSES METER BOARD**				
		Supplying the following sheet steel cubicle type panels fabricated from 16 gauge CRCA sheet, dust and vermin proof, indoor type TPN Main board with hinged lockable doors fabricated from 14 gauge CRCA sheet, suitable for 415V, 3 phase 4 wire 50Hz AC supply with separate cable alley and lockable bus-bar chamber and including supplying and fixing following switchgears and accessories, inter-connections, bonding to earth, power coted painting and marking as specified. Switch board complete as per schematic diagram:				
		Type of construction: Form 3, IP classification: 42				
		Incomer				
		1nos 200A TPN MCCB 25 kA inbuilt Microprocessor release having protection against O/L & S/C, with rotring handle complete with				

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

		Busbar: 300A TPN Aluminum with Heat Shrink Sleeve				
		Outgoings:				
		5 nos 80A FP MCBs with Space for 5nos four wire 10-60A three phase 50Hz AC supply electronic KWH Meter in hinged lockable doors with viewing glass doors, door sealing arrangement will be as per BSES requirement. Separate cable alley and lockable Aluminium bus-bar chamber, with sealing arrangement as required.	Each	RO		
	3	**MAIN PANEL:**				
		Proving and fixing Cubicle type, base mounting control panel with hinged doors, undrilled bottom gland plate, AL. Bus Bar and accommodating the following:				
		SWITCH GEARS: 45A, 4 Pole Contactor for ALTERNATOR with Thermal O/L relay 45A, 4 Pole Contactor for MAINS (OPTIONAL)				
		BACK-UP PROTECTION: MCB for short circuit protection				
		MICROPROCESSOR BASED AMF MODULE INCORPORATING: Functions: supply, failure timer, restoration timer, 3 Impulse automatic engine Start / Stop logic & engine fails to start lockout Mains / Generator Voltage & Frequency Monitoring.				
		Multi-functional Meter with Scrolling Readings for: Water Temperature/ Oil Pressure, Voltage / Ampere/ Frequency / kW / kVA, Running-hour counter				
		Electronic kWH meter (Counter Display) Current Transformers: Indications (LED): DG ON, Load on DG Mains ON, Load on Mains, Battery Charger ON Push Buttons (AMF MODULE BY PASS MODE) : Engine START / STOP (Provided on Engine Controller) Generator Contactor CLOSE / TRIP, Mains Contactor CLOSE / TRIP (If provided), Fault ACCEPT / RESET				
		BATTERY CHARGER: SMPS Based Unit with inbuilt Auto/Manual & Float/Boost Facility, DC Voltmeter & Ammeter (Separate)	Each	1.00		
	e)	**EARTHING:**				
	1	Earthing with **GI earth** plate 600mm x 600mm x 6mm thick including accessories, and providing masonary enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal or coke and salt complete as required. (Earth resistance should not be more than two ohms.)	Each	RO		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

	2	25 x 6mm thick GI tape	Rmt	RO		
	f)	**MISCELLANEOUS WORK**				
1		Providing and Fixing Bell points in Each Consultant cabin including wiring complete.	each	12.00		
2		Providing and Fixing anchor fasteners capable of 150 kg load on main ceiling in Occupational Therapy and Sensory Garden therapy as per location given in drawing	Each	10.00		
3		Providing speaker wiring for Audiometry room	Each	1.00		
4		Providing speaker wiring for entire DEIC with Controls at reception	Each	12.00		
5	**CCTV system**	Providing and fixing NVR IP- Dome and Bullet cameras with DVR including 32" NVR DVR TV etc. complete.				
	i)	32" NVR DVR TV MODEL -TD35564H8	each	1.00		
	ii)	NVR 1P Dome+ Bullet cameras TV- model- TD952451, TD952152(2Amp)	each	24.00		
	iii)	HDD4TB Surveillance (WD)	each	2.00		
	iv)	Power Supply 5mps	each	6.00		
	v)	D-link internet switch 4port	each	4.00		
	vi)	D-link internet switch 8port	each	4.00		
	vii)	Crimping & connectors	LS	1.00		
	vii)	Fitting , Installation charge per DVR & Camera	each	1.00		
	NOTES:	Cat-6 data cable D-link extra as per require. Copper power cable is also extra as per required				
6.00	**AIR-CONDITIONING WORKS**					
		SPLIT Hi-WALL AC				

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

	a)	Providing and installation Blue Star 5HW18SA1 1.5 Ton without door rotary compressor having 5 Star Split AC has an energy rating of 5. It consumes 1500 W power input. The air conditioner is Split type and has a capacity of 1.5 Ton. Air Flow Direction Control, Horizontal Louvre / Vertical Swing: Motorised, Vertical Louvre / Horizontal Swing: Manual Tube Size and Piping Capability - Suction Tube Size Outer Diameter: 12.7 mm, Liquid Tube Size Outer Diameter: 6.35 mm, Maximum Piping Capability Total: 20 m, Maximum Piping Capability Vertical: 10 m, Refrigerant Additional Charge Beyond 3.66 m (g/m): 15. Night glow functions on remote control. Anti-freeze thermostat, memory feature. Noise level 38dB indoor.				
	i)	Supply of 1.5 TR Hi-wall split A.C. (Carrier/ Blue star-3star)	Each	16.00		
	ii)	Installation charge for 1.50TR Hi-wall split A.C.	Each	16.00		
	iii)	Supply, fitting & fixing of copper refrigerant pipe 5/8 & 3/4 between indoor unit to outdoor unit for A.C. machine	Rmt	325.00		
	iv)	Supply, fixing of 25mm dia PVC drain for A.C. machine.	Rmt	325.00		
	v)	Supply, fitting & fixing of 4-cre 2.50sqmm Electrical power cable for A.C.	Rmt	350.00		
	v)	Supply, fitting & fixing of M.S. channel for A.C. machine.	Each	16.00		
		WINDOW AC				
	b)	Providing and installation blue star 1.5 ton capacity window air conditioners with rotary compressor having 3 star energy consumption rating , remote control functioning .	Each	14.00		

Please Note:-

1. Form must be completed in all respects, Incomplete forms may liable to be rejected.

2. The form must be duly signed and sealed by the Authorised signatory

3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

Annexure -III

Undertaking

This has reference to the RFP published in the website of HLFPPT on…….In response to the RFP, we have submitted our technical & financial bids on……..at your office …… In connection with the above bids, we hereby declare as under:-

i- That we are neither related to any of your Trustees, Officers and other employees nor do we have any financial, commercial or other interests with any of the above persons in any capacity whatsoever.

ii- That we have submitted the bids in the name of M/S…….....and declare that no other bids have been submitted by us in the name of any other firms/companies/proprietors/individuals which comes under the same management and related parties.

iii- We hereby undertake, that in case of any violations to the above declarations at any stage of the contract, HLFPPT reserves the sole right to cancel the contract and recover the full value of the contract from us.

Please Note:-
1. Form must be completed in all respects, Incomplete forms may liable to be rejected.
2. The form must be duly signed and sealed by the Authorised signatory
3. The form must be submitted on or before due date and time.

Name & Signature of Authorised Signatory
Name & Seal of the Firm/ Agency
Address:
Telephone/ Fax

ANNEXURE IV

	SPECIFICATIONS FOR INTERIOR WORKS
1	General This Specification is for work to be done, item to be supplied and materials to be used in the works as shown and defined on the drawings and described herein, all under supervision and to the satisfaction of the Architects. The specification given under are General Specifications and shall be applicable only to relevant items specified in the tender Schedule. In case of brought out items where the model number is mentioned the manufacturer's specifications shall be valid.
1.1	The workmanship is to be the best available and of a high standard, use must be made of a special trades men in all aspect of the work and allowance must be made in the rates for so doing.
1.2	The materials and items to be provided by the Contractor shall be approved by the ARCHITECTS in accordance with any samples which will be submitted for approval by Contractor and generally in accordance with the Specifications. Also if products are specified in the Specification and/or bill of brand, trade name or catalogue reference, the Contractor will be required to obtain the approval of the architects before using the materials. The Contractor shall produce all in voices, Vouchers or receipts for any material if called upon to do so by the architects.
1.3	Samples of all materials are to be submitted to the Architects for approval before the Contractor orders or deliver the materials at site. Samples together with their packing are to be provided free of charge by the Contractor and should any materials be rejected, they will be removed from the site at the Contractor's expense. All samples will be retained by the Architects for comparison with materials which will be delivered at the site. Also, the Contractor will be required to submit specimen finishes of colours, fabrics etc. for the approval of the Architects before proceeding with the work.
1.4	The contractor shall be responsible for providing and maintaining and boxing or other temporary coverage's required for the protection of dresses or finished work if left unprotected. He is also to clean out all shelving, out ends and other waste from all pairs of the works before coverings or in-fillings are constructed.
1.5	Templates, boxes and moulds shall be accurately set out and rigidly constructed so as to remain accurate during the time they are in use.
1.6	All unexposed surface of timber e.g. false ceiling, backing fillets, backs of door frames, cupboard framing, grounds, etc. are to be treated with two coats of approved timber preservative before fixing or converging.
1.7	Only first class workmanship will be accepted. Contractor shall maintain uniform quality and consistency in workmanship throughout.
2	**Joinery**
2.1	Joinery is to be prepared immediately after the placing of the Contract framed up, bonded and waged up. Any portions that are warped or found with other defects are to be replaced before wedging up. The whole of the work is to be framed and finished in a workmen-like manner in accordance with the detailed drawings wrought and whenever required, fitted with all necessary metal ties. Straps, belts, screws, glue etc. Running beaded joints are to be cross tongued with teak tongues wherever 1(1/2) thick. Double cross tongued. Joiners work generally to be finished with fine sand/glass paper.

2.2	Joints All joints shall be standard mortise and tenon, dowel, dovetail, and cross halved. Nailed or glued but joints will not be permitted, screws, nails etc. will be standard iron or wire of oxidized Nettle fold tenons should fit the mortises exactly.
2.3	Nailed or glued butt joints will not be permitted, exceptional cases with approval of PCL/MMCI.
2.4	Where screws shown on a finished surface, those will be sunk and the whole plugged with a wood plug of the same wood and grain of the finished surfaces will be neatly punched and the hole filled with wood filler to match the colour.
2.5	Should joints in joiner's work open, or other defects arise within the period stated for defect liability in the contract and the clause thereof be deemed by the Architects to be due to such defective joinery shall be taken down, and refilled, redecorated and/or replaced if necessary and any work disturbed shall be made good at the Contractor's expense.
2.6	Nails, spikes and bolts shall be of lengths and weights approved by the Architects. Nails shall comply with IS 1959-1960. Brass headed nails are to comply with B.S.1210. Wire staples shall comply with B.S.1494 or equivalent.
2.7	The contact surface of dowels, tenons, wedges etc., shall be glued with an approved adhesive. Where glued, joinery and carpentry work is likely to come into contact with moisture; the glue shall be waterproof grade.
3	**Hardware and Metals**
	The hardware throughout shall be of approved manufacture or supplier well-made and equal to in every respect to the samples to be deposited with the Architects. The Contractor may be required to produce and provide samples from many different sources before the Architects take decision and he should allow his rates for doing so.
3.1	Fittings generally shall be brass polished & lacquered, unless otherwise specified and shall be suitable for their intended purpose. In any case, it will have to be approved by Architects before the Contractor procures it at site of work.
3.2	Screws are to much the finish of the article to be fixed, and to be round or flat headed or counter sunk as required.
3.3	The contractor should cover up and protect the brass and bronze surfaces with thick grease or other suitable productive material, renew as necessary and subsequently clean off away on completion.
3.4	Aluminium and stainless steel shall be of approved manufacture and suitable for its particular application. Generally the surface of aluminium shall have an anodized finish and both shall comply with the samples approved by the Architects. All stainless steel sheets shall be 304 SS Japan or equivalent with gauge as specified but not thinner than 16 G.
3.5	All steel, brass, bronze, aluminium and stainless steel articles shall be subjected to a reasonable test for strength, if so, required by the Architects at the Contractor's expense.
3.6	All brazing and welds are to be executed in a clean and smooth manner rubbed down and left in the flattest and tidiest way, particularly where exposed.
3.7	Chromium plating shall be in accordance with I.S. Standard or as per approved specification for normal outdoor conditions and shall be on a base material of copper or brass.
4	**Glazier**
4.1	All glass to be of approved manufacturer complying with I.S. 3548-1966 as per approved quality and sample to be of the selective qualities specified and free from bubbles, smoke, air holes and other defects.

4.2	Polished plate glass shall be "glazing glass" (G.G.) conforming to IS 3438-1965 or as per approved sample and quality.
4.3	The compound for glazing to metal is to be a special non-hardening compound manufactured for the purpose and of a brand and quality approved by the Architects.
4.4	While cutting glass, proper allowance be made for expansion. Each square of glazing to be in one whole sheet. On completion of work clean all glass inside and out, replace all cracked scratched and broken panes and leave in good condition.
5	**Paints and Polishes**
5.1	All material required for the works shall be of specified and approved manufacturer, delivered to the site in the manufacturer's containers with the seals etc., unbroken and clearly marked with the manufacturer's name or trade mark with a description of the contents and colour. All materials are to be stored on the site of the work.
5.2	Spray painting with approved machines will be permitted only if written approval has been obtained from the Architects prior to painting. No spraying will be limited in the case of priming coats nor where the soiling of adjacent surfaces is likely to occur. The buzzle and pressure to be so operated as to give an even coating throughout to the satisfaction of the HPCL/ MMCI. The paint used for spraying is to comply generally with the specification concerned and is to be specially prepared by the manufacturer for spraying. Thinning of paint made for brushing will not be allowed.
5.3	Wood preservative shall be Bison or other equal and approved impregnating wood preservative and all concealed wood work shall be treated with wood preservative.
5.4	All brushes, tools, pots, kettles etc. used in carrying out the work shall be clean and free from foreign matter and are to be thoroughly cleaned out before being used with a different type of class of materials.
5.5	All iron or steel surfaces shall be thoroughly scraped and rubbed with wire brushes and shall be entirely free from rust, mill scale etc. before applying the priming coat.
5.6	Surfaces of new wood work which to be painted are to be rubbed down, cleaned, down to the approval of the Architects.
5.7	Surfaces of previously painted woodwork which are to be cleaned down with soap and water, detergent solution or approved solvent to remove dirt, grease etc. While wet the surfaces shall be flatted down with a suitable abrasive and then rinsed down and allowed to dry. Minor areas of defective paint shall be removed by scraping back to a firm edge and the exposed surface touched in with primer as described and stopped with putty. Where wood work has been previously painted or polished and is to be newly polished, scrapping, burning off or rubbing down.
	Surfaces of previously painted metal which shall be painted are to be cleaned down and flattened down as described in surfaces of any rust and loose scale shall be removed completely by chipping , scrapping and wire brushing back to the bare metal and touched in with primer as described .
6	**Upholstery**
6.1	This will be of first class standard workmanship with webbing, no-sag springs, coiled springs, padding and filling as specified on drawing. Covering fabrics will be seen, tufted, and corded as shown on the drawing and as approved by the Architects.

6.2	Cushion vents Brass “cushion vents" should be installed at the back or under side of seat cushions (especially those covered in leather vinyl plastic or very tightly woven fabric) to allow air to escape easily and to prevent torn seams.
6.3	Materials Finished timber shall be of the type specified. Furnishing fabrics, colour, pattern, substance to be as specified and manufactured or supplied by the Company specified, no variations of this will be permitted unless with prior approval of the Architects.
7	**Polish**
7.1	**French Polish**
	The basic material shall be shellac dissolved in methylated spirit.
	Preparation:-The timber must be sanded and cleaned and the grain filled with a grain filler .Any staining must be done before applying the polish.
	Equipment:-The polishing rubber the most important implement in French polish shall consist of a pad of cotton wool, which acts as a reservoir for the polish, and a cover of soft white linen or cotton fabric, similar to a well-worn handkerchief which acts as a fitter, the rubber must never be dipped into the polish.; it should be changed by pouring the pouring the polish on to the pad with the cover removed.
	Application: - Work evenly over the surface with a slow figure-of-eight motion until the timber is coated with a thin layer of polish. The objective is to apply a series of thin coats, allowing only a few minutes for drying between the coats. When a level and even-boiled surface is obtained the work is ready for the second stage i.e. spiriting off. Allow the work to stand for at least eight hours then take a fresh rubber with a double thickness of cover material and charge it with methylated spirit. The object of spiriting off into and remove the rubber marks and to give the brilliance of finish. Finally, work in the direction of the grain and continue until the surface is free from smears and rubber marks then leave to harden off.
7.2	Wax polish Wax polish shall contain silicones and driers. A good silicon wax is to be used not a creamy or spray. The timber shall be sealed first with another finish such as Ronseal, before applying the wax. Application: - Apply a light coat of the sealer by brush or cloth direct to the unfilled timber, working it well in and finishing evenly with the grain. Allow to dry thoroughly then sand lightly with fine abrasive paper. Apply a heavy coat of wax by cloth or on flat surfaces, with a stiff brush. Work it well into timber and finish off by stroking with the grain before leaving to harden. Leave for several hours before rubbing up with a soft brush .Finally; buff the grain with a soft cloth.
7.3	Transparent Colored Polyurethane (Melamine) this shall be applied where natural grain of the wood is required to show. Polyurethane gives tough surface which resist chipping, Scratching and boiling water. Application: - Clean off all grease and wax with an abrasive and white spirit, this should not be applied in humid conditions. Apply the first coat, preferably of clear hard glaze with a cloth pad. Leave this to dry for at least six hours, and then apply further coats with a paint brush. If you wait for longer than 24 hours between coats , rub down the previous coat with fine glass paper or a medium grade of steel wool .Obtain a Matt finish , if required by giving a final coat of clear Renseal Matt coat .
8	**Timber**
8.1	Only seasoned New Burma Teak Wood or Sal Wood to be used.
8.2	All the wood shall be properly seasoned, natural growth and shall be free from worm holes, loose or dead knots or other defects, saw die square and shall not suffer warping, ting or other defects.

8.3	The moisture content shall not exceed 12% 8.4 All internal frame work shall be treated with approved wood preservative. 8.5 All wood brought to site should be clean shall not have any preservative. 8.6 All rejected decayed, bad quality wood shall be immediately removed from site. All wood brought to site must be stacked-stored properly as per instructions.
9	**Plywood**
9.1	Plywood/medium density fiber board/teak particle board/ Veneered board etc., as specified in the approved list of manufacturers shall only be used.
9.2	Only Fire retardant type exterior grade Phenol formaldehyde bonded, hot pressed ply generally conforming to I.S.I. 5509 of approved make only to be used.
9.3	Marine plywood shall generally conform to I.S.710-1980 and also to Defense/ Navy specification bonded, with phenol formaldehyde, treated with wood preservative.
10	**Carpentry Work**
10.1	Frame Work Providing and fixing in position Exterior Grade MDF frame work for partitions upto true ceiling height, paneling, boxing, soffit with vertical members at not more than 450 mm centres and horizontal members not more than 450 mm centres complete including necessary additional supports, bracing runner etc. complete as per drawing and directions. Items are to be completed in all respects as per drawings & instructions from Architects. Rate to include applying of approved wood preservative approved make on the finished frame work.
	Note :- Size out of 50mm * 35 mm
11	**Panelling / Boxing**
11.1	Fixing 12mm Thick MDF Board Providing and fixing in position 12mm thick Exterior Grade MDF board. Item are to be completed in all respects as per drawings & instructions from Architects. Rate to include make on the inner side of the board. Actual executed area will be measured.
	Providing and fixing 8mm thick Glass in partition of approved make (MODI GUARD / SAINT GOBAIN etc), of appropriate size as per drawings and design with necessary wooden mouldings / biddings to hold the glass in position . All exposed wooden surfaces has to be finished with 2/3 coats of malamine polish.
	Finishes for Partitions / Panelling, Etc. IMPORTANT NOTE: Actual executed area will be measured on one side of partition. Rate of this item shall include cost of providing fixing wooden facia, if any, matching laminate in approved pattern, skirting, Cornice Moulding at both door level and false ceiling level, Top Cap moulding in case of Low Height Partition etc. as per details and finished in melamine polish of wooden and veneered surfaces for which no extra payment shall be made but shall measured alongwith the partition dimensions. The finishing material shall be fixed in required divisions/ panels/ pattern with proper grooves etc. as per drawings & directions. Item are to be completed in all respects as per drawings & instructions from Architects. Rate shall include supplying and installing electrical light modular switches as per the ceiling lighting plan and also providing 15nos 5/15 amps modular plug points along with switches in the interior partitionings, rate to include for wiring. 12 Laminate Providing and fixing laminates of 1.5mm thickness of approved make, shade and quality.
13	**Full Height Storage Units**
13.1	High Storage Providing and fixing storage units along with cabin partitions as per drawings including following

i.	Verticals - 19 mm ply thick. Laminated finished with both sides in all inside surfaces.
ii.	Skirting ledge and soffit ledge - With MDF frame out of 35mm x 35mm size finished with 12mm thick Fire retardant plywood and with necessary wooden beadings etc.
iii.	Shutters - Made out of 19mm thick ply with both sides laminated finish, with 0.8 mm thick decorative laminate from outside & 1mm thick Laminate of approved shade, make, texture & quality on inner side. The shutters to be provided with Multi-round locks. Inner side of the shutters to be provided with 0.8mm thick laminate and 6mm thick lippings to be provided on all exposed ply surfaces and be finished with melamine polish on all the exposed edges.
iv.	Hardware - All necessary hardware such as SS hinges, tower bolts, Magnetic catches etc. Hardware shall be heavy duty SS type, brass body lock (Godrej /Dorset or equivalent make with extra large group key).
	Rate to include for Providing & fixing in position shelves out of 19mm thick plywood finished at intervals of 18" Ht. with laminated and edge TW lipping of 19 *6mm on all four sides including supports for the shelf out of 19mm. Item are to be completed in all respects as per drawings & instructions from Project-in-charge. All exposed woodwork to be Melamine polished, all internal surfaces to be finished with laminated finished; complete as per drawing and directions.
	The exposed surface shall be finished as mentioned below –
	With 0.8 mm thick Laminate of approved make and shade
	Note: The backside of the storage items has to be finished with approved synthetic enamel paint. Only front area is measured for payment of storage units.
14	Low Height Storage Units Same as item no. 5 above but for storage unit made, out of 19mm THICK commercial plywood and back out of 6mm plywood with bottom ledge finished with the following finish, All wooden surface to be melamine polished with 2/3 coats of melamine polish. The height shall be 0.8 to 0.9m to match the sill of window. NO soffit ledge, however the skirting ledge - With ply wood frame out of 35mm x 35mm size finished with 19mm thick commercial and with necessary wooden beadings etc. as per drawings & instructions from Architects.
	With laminate of approved shade & make Laminate (0.8mm THICK) and only front area to be measured.
15	Credenza Units/ Side Units Providing & fixing in position credenza units made out of 19 mm marine ply, for officers & staff in general office area and cabin with shelves, drawers, shutters as per drawings, out of 19mm THICK plywood finished with material specified below from outside & French polish from inside. Item are to be completed in all respects as per drawing & instructions from EIC. The item shall include two key board trays, one drawer box with a set of drawers and sliding shutters below key board trays as per the drawing and details. All shelves, sliding shutters, drawer box, drawer front etc. shall be out of 19 mm thick plywood. Drawer sides shall be in 12 mm THICK plywood. Drawer bottom shall be in 6 mm thick commercial plywood. The exposed surfaces to be finished as follows and wooden exposed edges are to be finished with laminated.
	Finished with
	With laminate of approved shade & make Laminate (0.8mm THICK) and only front area to be measured.
16	**Soft board**

	Providing and fixing in position soft board panelling on existing partition including fabric cover, wood beading finished with melamine polish of approved shade etc. complete as per directions. Basic rate for the fabric Rs.150/- per Rmt.
17	**Writing boards**
	Providing and fixing in position writing board on existing partition including suitable laminate finish to suit use of board markers, wood beading finished with melamine polish of approved shade etc. complete as per directions. Rate to include duster and pen stand along with first time consumables
18	**FRP planters**
	Providing & arranging in position FRP planters of following sizes as per approved design with heavy gauge approved design with heavy gauge. Rate to include for natural indoor plants of approximately 3 feet height. The FRP planter shall be sitting in metal show planter of golden / brass color. 350mm dia.
19	**Center / Side Tables**
	Providing & arranging in position center tables out of T.W. members 40mm * 75mm with proper joinery & hardware as per drawings of the following sizes. The top to be finished with 12mm thick tinted glass top with beveled edges. Item to be completed in all respects as per drawings & instructions from Project-in-charge.
20	**Flush Doors - With Glass Portion as per Design**
	Note for Doors:
	The rate of doors shall include Door handle, Door Lock, Door closure, PVC door buffer, door stopper, latches, hinges etc. as required.
20.1	**Door frames for partitions**
	Providing and fixing T.W. door frame of finished size 150 x 63mm as per profile shown in the drawing and finished with 3 coats of melamine polish as per details.
	Note -: Measurement of frame shall taken along the center line of frame
20.2	**Flush Doors – Laminate**
	Providing and fixing wood framed shutters to cabin partition as per details. Internal frame in T.W wood with top, bottom, lock rail and side runners out of 100mm x 30 mm and internal frame work out of 30mm x 30mm at 400mm center to center & 6mm thick commercial plywood on both sides with T.W. beading, door closure, door handle, lock. Door to be finished with both side laminate & T.W. lippings to be finished with melamine polish.
20.3	**False Ceiling**
	Providing and installing of removable type aluminium false ceiling system for horizontal inclined and vertical comprising of square edge plane panels, 84mm wide x 15 mm deep with 25mm recessed flanges, formed out of 0.5 mm thick aluminium alloy electrically powder coated in standard colour shades as approved by the MMCI/HPCL Engineer In Charge. The panels shall be fixed on formed carriers, 15 mm wide at top 43 mm deep made out of 0.19 mm thick aluminium alloy electrically powder coated in stain black with protruding ears to hold panels in module of 100 mm, with 16 mm gap between the panels, carrier spacing shall be maximum 1.3 M c/c.

	Carriers to be suspended from the slab or roof by 4 mm dia. galvanized steel wire or rod hangers with height adjustment suspension springs made out of galvanized spring steel. Hangers shall be fixed to roof or slab by J-hooks and nylon inserts. Edges of the ceiling shall be neatly trimmed with suitable matching edge profiles to cover the gap between the false ceiling and the walls. Acoustical and thermal insulation blanket of 25 mm thickness of resin bonded mineral wool covered in polythene bags shall be laid over the aluminium panel ceiling. The rate shall also include the cost of extra materials and labour required to support and fix A.C. diffusers, grills return air slits etc. in the ceiling system. All this work to be as per drawing and as per Technical Specifications complete in all respects. Recommended false ceiling system is LUXALON by M/s. LLOYDS or equivalent.
	Mode of Measurements
	Measurements shall be wall to wall without any deductions for lights, diffusers, columns etc.
21	**Sun Control Film**
	Providing & fixing in position sun control film of approved quality, make and shade on windows / glass partitions.
22	**Vertical Blinds**
	Providing and fixing Sunflex/ Vista / Mac /approved equivalent make vertical blinds of approved shade. The blinds to be fixed and commissioned as per manufactures specification. The work is to be completed as per satisfaction & approval of the EIC.
23	**Supply and fixing of fixing of ACs**
	Supply and fix split / ductable split Ac as per SOQ Supervision of Dismantling & Fixing of 1.5 TR / 3.0 TR split Ac. The ACs shall be relocated from owner's office however the entire repairing of the walls after fixing of Acs by vendor shall be in this scope.
24	**Supply and fixing of PC projector and screen**
	Supply and fixing of PC projector and screen as per specification. The same shall be suitable for mounting on False ceiling and the cable lengths shall be suitably long. The cabling and power sockets shall be drawn from One of the tables. (Pls refer Annexure I).
	Vendor is required to submit the Drawings based on specifications and tentative drawings for approval before start of execution of job at site.

SPECIFICATIONS FOR CIVIL WORKS	
1	**General :**
(a)	The work shall be carried our strictly in accordance with particular specifications and drawings. The drawings and specifications shall be taken complementary and also supplementary to each other and shall form part of this contract. Any work or materials shown in drawing and not specifically included in specifications or vice versa shall be executed and deemed to be included in the scope of work.
(b)	In case there are no specifications for items on the drawings or where items are not exhaustively described, the general specifications of CPWD/BIS shall be followed.
2	**Scope of Work :**
(a)	The scope of work for all interior works.
3	**Sample of Materials :**
	The contractor shall produce sample of all materials and shall obtain approval of these in writing from Consultants/Project consultant before he places bulk order for the materials for incorporation in the work. BIS marked goods where manufactured shall be used.
4	**Slopes :**
	Adequate slopes shall be provided in areas where there is likelihood of ingress of water such as toilets, canopies, terraces, windows sills etc. though these may not be expressly shown in drawings.
	EXCAVATION EARTH WORK AND ANTITERMITE TREATMENT:
1	**Site Clearance:** Before the start of work, the site shall be cleared of shrubs, vegetation, grass, bush wood etc. The debris and unwanted material shall be disposed as directed.
2	**Excavation in Trenches:** Earth work in excavation in existing soil for foundation of columns and walls shall be carried out as indicated in the drawing.
3	**Antitermite Treatment :** This shall be provided to bottom of trenches, sides, including treating the backfill, under floors and other locations as specified in IS -6313 Part - II for preconstruction soil, treatment (using aldrin emulsifiable concentrates 0.5% conforming to is 1307-1973). The work of antitermite shall be executed by a specialist firm along with performance guarantee for 10 years.
4	**Earth Filling:** Earth shall be filled in layers not more than 20cms in depth at a time, spread, levelled, watered and well consolidated around foundation under floors and other locations.
5	**Sand Filling:** 100mm thick sand filling underground floors shall be used. This shall be dry Jamuna fine sand watered and consolidated including dressing and levelling.
1	**Materials :**
(a)	Cement shall be ordinary portland (Grade 43) of ACC, BIRLA, JK etc. or as approved by consultants. Cement shall be stored in a dry water proof godown.

(b)	**Fine Aggregate:** For all concrete work it shall be coarse sand/coarse stone dust silt content not to exceed 4% by weight.
(c)	Waters used in concrete, brick work plasters shall be drinking water (Clean, Fresh and non-saline according to relevant IS code).
2	**Mixing:** All cement concrete (plain or reinforced) shall be mixed in mechanical mixers.
3	**Consolidation :** concrete for all reinforced concrete work in column, footing, beams slabs and the like shall be deposited and well consolidated by vibrating, using portable mechanical vibrator.
	Form Work :
4	General: The steel/plywood form work shall be designed and constructed to the shapes, line and dimension shown on the drawing. All form shall be sufficiently water tight to prevent leakage of mortar Marine ply shall be used for columns, sides and bottom of beams. Pre moulded cement mortar cubes and plastic blocks will be placed between form work and reinforcement to achieve uniform cover of concrete. Maximum height of columns for which concrete can be placed at a time shall not be more than 2 mtrs.
5	Removal of form work: Form work shall be removal in such a manner as would not cause any shock or vibration that would damage the concrete.
6	Chicken wire mesh 24 gauge and 20mm thick shall be provided all along RCC surface adjoining brick work giving 15cm lapping on either side using nails etc. for fixing jali while plastering internal surface suitably.
7	Curing: Exposed surface of concrete shall be kept continuously in damp or wet condition by covering with a layer of sacking canvas or layer of sand or by ponding for at least seven days from the day after the day of placing concrete.
8	Damp proof course: This shall consist of 40mm thick P.C.C. 1:2:4 (1cement:2 coarse sand: 4 graded stone aggregate 10mm nominal size) with water proofing compound CEMSEAL at the rate of 1 ltr. per 50 kg of cement over DPC as provided above a coat of bitumen 80\100 @1.7 kg/sqm shall be provided.
	BRICK WORK:
1	Common burnt clay bricks: Bricks shall be class designation 75, class A as per the parameters given in the IS Codes regarding edges, dimensions, etc. Brick shall be free from crack flows and nodules of free lime. Under/over burnt bricks and warped bricks shall be totally rejected.
2	Preparation of cement mortar: Mortar shall be of mix as indicated. The mixing specified are by volume mixing shall be done by a mechanical mixer.
3	Curing: The bricks shall be adequately wet before use.
	STEEL WORK AND IRON WORK:
1	Steel and iron shall be executed as indicated in the drawing and as per the standard practice.

2	Reinforcement
(a)	6mm dia shall be MS bars
(b)	8mm dia and above shall be deformed twisted steel bar or TMT. (TISCO, Rathitor, Kaamdenu)
(c)	The contractor shall be responsible for accurate fixing and placing of reinforcement as shown in the drawing and shall not place the concrete until the reinforcement has been checked by the consultants/ Project consultants.
3	The contractor shall used the material as per the brand indicated above. When two or more alternative brands have been mentioned, the brand to be finally used shall be decided by the Architect / Engineer.

TECHNICAL SPECIFICATIONS FOR SANITARY & WATER SUPPLY WORK						
1	**For Public Health & Plumbing Works**					
1.1	**Salt Glazed Stoneware Pipes**					
	DELETED					
1.2	**Cement Concrete Pipes**					
	DELETED					
1.3	**Cast Iron Pipes**					
	C.I. pipes where called for on the drawings shall be good touch quality dark grey on fracture and capable of being worked with a drill or file. C.I. pipes and fitting, shall be sound with smooth inner and outer surface free from hard hammer. The C.I. pipes shall be provided with a coating of tar or similar material. The coating shall be smooth and tenacious and hard enough not to flow when exposed to a temperature of 77 degree centigrade but not so brittle at temp. of 0 degree centigrade so as to chip off when lightly scribed with a pen knife. C.I. water main pipes shall conform to Indian Standard IS: 1536 and IS 1537 the fittings shall conform to IS: 1438. Pipes and fittings for drainage (soil, waste, and vents) shall conform to IS: 3989-1970 and/or IS: 1729-1864 as specified. The pipes shall be of socket and spigot type. Quality certificates shall be furnished.					
	Standard weight, dimensions and pig lead required for joints shall be as follows:					
	For pipes conforming to I.S. : 3989-1970 (Centrifugally spun soil pipes)					
	Nominal	Dia	Thickness	Overall weight (6ft. Length/ 1.83mtr.)	Internal dia of socket	Depth of lead
	2 inch	50mm	3.5mm	8.5 kg.	73mm	25mm
	3 inch	75mm	3.5mm	12.7 kg.	99mm	25mm
	4 inch	100mm	4.0mm	19.2 kg.	126m	25mm
	6 inch	150mm	5.0mm	35.5 kg.	178mm	38mm
	For pipes conforming to I.S. : 1729-1967 (sand cast iron soil pipes and fittings)					
	Nominal	Dia	Thickness	Overall weight (6ft. Length/ 1.83mtr.)	Internal dia of socket	Depth of lead
	2 inch	50mm	5 mm	11.41 kg.	76 mm	25mm
	3 inch	75mm	5 mm	16.52 kg.	101 mm	25mm
	4 inch	100mm	5 mm	21.67 kg.	129 mm	25mm
	6 inch	150mm	5 mm	31.91 kg.	181 mm	38mm
1.4	**Galvanized Iron Pipes**					

	Galvanized iron pipes and fittings where called for on the drawings shall be of galvanized mild steel or galvanized wrought iron. The pipes shall be `medium' or `heavy' class (as required as per item) Jindal or equivalent ISI make. The fittings shall be `Unik' brand fittings.
	All pipes and fittings shall be of heavy class manufactured by Indian Tube Company or Bharat Steel Tubes. The fittings shall be `R' brand fittings for all as approved (heavy class) ISI Make. The pipes and fittings shall conform to Indian Standard IS: 1239 - Part I and Part II. On delivery to site, the pipes and fittings shall be painted with one coat of approved red oxide primer.
1.5	**Copper Pipes**
	Copper pipes where called for shall be light gauge copper pipes suitable for hot water distribution. The fittings shall be of copper either compression type or capillary type, the pipes and fittings shall be obtained from an approved manufacturer. The pipes shall generally conform to Indian Standard IS: 1545-1969.
1.6	**PVC Pipes**
	PVC pipes where called for small be either unplasticised PVC pipes or High Density polythene pipes supplied with appropriate fittings. The pipes and fittings shall be of 10 kg. per sqm. Pressure class of I.S.: 4985 (SWR-IS: 13592 Type – B and R.W. pipe I.S.: 13592 Type –A).
	PVC pipes shall be handled with care and stored in a place protected from the sun. All PVC pipes and fittings shall be manufactured by Supreme or Finolex or approved equivalent.
1.7	**Asbestos Cement Pipes**
	DELETED
1.8	**Sanitary Fixtures**
	All glazed vitreous china sanitary ware fixtures shall be of best Indian make of approved manufacture conformity to IS: 2556, and the colour and design shall be as approved by the Architect / Owner. These shall be non-porous and fully vitreous, with all the visible portions perfectly glazed and should be absolutely free from hairline cracks, pinholes and local depressions. These shall have perfectly symmetrical uniform and smooth curves.
1.9	**Water Supply Fittings**
	All supply fittings (including mixing fittings and accessories) shall be brass/copper, heavy chromium plated, of the make and design specified by the Architect / owner. The fittings shall be cast fittings of screw type, machined and threaded properly for fixing to the supply pipes. The plating shall conform to Indian Standard IS: 4827-1968.

	The fittings shall be supplied complete with chromium plated matching flanges, nuts and extension pieces of required lengths. Metallic washers where required shall also be of chromium plated brass. All bib cocks and stop cocks shall conform to Indian Standard IS: 781-1967, pillar cocks to filler, shower arm, spouts and other fittings shall match the supply fittings in construction and appearance. All fixing accessories and screws shall be similar to fittings. All washers shall conform to Indian Standard IS: 4326-1967.
1.10	**Waste Fittings**
	All waste fittings (waste, chain, pop-up, overflow, spreaders, caps etc.) shall be of brass/copper, heavy chromium plated of the make and design specified and match the supply fittings. They shall conform to Indian Standard IS: 2963-1964.
	Bottle Traps
	Bottle traps (for wash basins, sinks, urinals, etc.) shall be deep seal (minimum 6 cm. seal), cast brass bottle traps, heavy chromium plated, all bottle traps shall be provided with suitable cleaning eye, extension piece, flare nuts - all chromium plated. Bottle traps shall be of approved make and design. Traps for wash basins shall be 32 mm (1-1/4") for sinks and urinals 40 mm (1-1/2 inch) dia.
	Wall Flange
	Wall flange shall be provided on all walls, floors, columns, etc. wherever supply and disposal pipes piece them. These wall caps shall be of chromium plated brass supply snugly fittings the receiving pipes and shall be large enough to cover the punctures properly.
1.11	**Valves**
	All valves (gate, globe, check) shall be either all brass or gun metal valves suitable for the particular service. All valves shall be of the particular duty and design called for similar to `Leader' or GG Bombay, make or approved equivalent valves shall be tested to 21 kg/sqm pressure at manufacturer's works.
	Valves shall either be of the screw type or flange type, with suitable flanges and non-corrosive bolts and gaskets. Tail pieces as required shall be supplied along with valve. Gate, globe and check valves shall conform to Indian Standard IS: 778-1971 and non return valves to swing check type reflux (non-return) valves IS: 5312 (Part I) 1969.
	Sluice Valves
	Sluice valves, where called for shall be flanged sluice valves or C.I. body. The spindle, wall seat and edge nuts shall be of gun metal, they shall generally have rising spindle and shall be of the particular duty and design called for. The valves shall be supplied with suitable flanges, non-corrosive bolts and asbestos fibre gaskets, the valves shall be of `Kirloskar' make or other approved equivalent as specified Sluice valves shall conform to Indian Standard IS: 7890-1969 and IS: 2906-1969.
	Ball valves with Floats

	Ball valves with floats to be fixed in storage tanks shall consist of cast brass lever arms having copper balls (28 SWG) screwed to the arm integrally. The copper ball shall have bronze welded seams. The closing/opening mechanism incorporating the piston and cylinder shall be of a non-corrosive metal and include washers. The size and construction of ball valve and float shall be suitable for desired working pressure operating the supply system. Ball valves shall be supplied with brass hexagonal back nuts to secure them to the tanks and a socket to connect to supply pipe, all ball valves with floats shall conform to Indian Standard IS: 1703-1968.
	Floor Traps and Urinal Traps
	Floor traps and urinal traps shall be of C.I. of the size required, of approved design incorporating a deep seal (6 cm. minimum) and venting device unless otherwise indicated. The traps shall be supplied with a specially C.I. extension piece with required number of sockets in appropriate directions to receive the waste/soil pipes from wash basin/bath tub/urinal.
1.12	**Fire Hydrant Landing Valves**
	Fire Hydrant landing valves shall be of gun metal, 63 mm dia. instantaneous coupling type with blank caps. They shall be with single or double outlet as called for. Where indicated all hydrants shall be supplied with standards stand posts. All fire hydrants shall conform to Indian Standard IS: 908-1965 and IS: 936-1965 and stand pipes to IS: 5714-1970. All Hydrants shall be of approved make and design and should carry fire Insurance Association approval.
1.13	**Lawn Hydrants**
	Lawn hydrants shall of be 2.5 cms size, unless otherwise indicated. All hydrants shall be provided with gate valves and threaded nipple to receive hose pipes, where called for lawn hydrants shall be located in masonry chambers of appropriate size as indicated.
1.14	**Water Meters**
	DELETED
	DELETED
1.15	**Pipe Hangers Brackets etc.**
	Sturdy hanger, brackets and saddlers of approved design shall be installed to support all pipe lengths which are not embedded over their entire run. The hangers and brackets shall be fabricated from suitable MS rolled sections. The hangers and brackets shall be adjustable heights and painted with red oxide primer. Clamps, collar and saddlers to hold pipes shall be provided with suitable gaskets. The brackets and hangers shall be designed to carry the weight of pipes safely. All pipes and fittings shall be secured near every joint and half way through every pipe length, unless otherwise, specified.
1.16	**Grating for Floor Traps, Urinal Traps and Floor Drains**

	Grating made of 3 mm thick brass heavily chromium plated shall be installed to cover all floor traps and floor drains. The gratings shall be of size required and the square or circular in shape as called for. The gratings shall be supplied complete with matching chromium plated brass screws and brass rings to fasten the gratings to the floor in traps.
1.17	**Insulation Material**
	The material for insulation shall be vermin proof fibre glass wool. The material shall have a thermal conductivity value of K = 0.404 MW/CMCo and a density not less than 25 kg per cum. Samples of insulating material shall be submitted for approval.
1.18	**Pipe Sleeves**
	Adequate number of sleeves (pipe inserts) of C.I. or mild steel shall be provided where pipes cross through concrete, masonry and similar work. The pipe inserts shall be of a size larger than the pipe to be housed. The pipe inserts shall have a flange welded in the Center around its circumference, in order to provide water tight and secure fixing into the structure. The pipe inserts shall be provided with removable timber I plugs to keep foreign matter out till installation of the service pipe across the sleeve.
1.19	**Cowls**
	Cowls of cast iron of proper size shall be supplied to cover all open terminals of soil, waste, vent and rain water pipes. The cowls shall be of the indicated design, vent away type, bitumastic coated and provided with a tail piece to fit snugly in the receiving pipe.
2	**Laying and Joining of Pipes**
2.1	**Alignment of Grade**
	All pipes shall be laid true to alignment and gradients as shown on the drawings. No deviations from the lines, depths of cuttings or gradients called for on the drawing shall be permitted without the approval in writing by the Architect. In subzero temperature regions the pipes shall be laid below frost level.
2.2	**Setting out Trenches**
	The contractor shall set out all trenchers, manholes and such other works to true gradient and alignment as called for. He shall provide the necessary instruments for setting out and verification of the same.
	All trenches shall be laid to true grade and in straight lines and as shown on the drawings. The trenches shall be laid to proper levels by the assistance of boning rods and sight rails which shall be fixed at intervals not exceeding 10 metres or as directed by the Architect.
2.3	**Excavation Trenches for Pipes**
	DELETED
	DELETED
2.4	**Protection of Existing Pipes etc.**
	DELETED

2.5	**Back Filling**
	DELETED
	DELETED
2.6	**Welding**
	All welding shall be executed only by skilled, qualified, certified welders utilizing standard tools and accessories. Welding shall be done strictly as per Indian Standard IS: 6227-1966 and IS: 83-1964.
	The operation of surfaces, the welding process and finishing of the joints shall be subject to the approval of the Architect. All welded joints shall be structurally sound and absolutely leak proof.
2.7	**Drilling and Cutting**
	Drilling and cutting of installed pipe work and masonry shall be restricted to absolute minimum. Where such cutting and drilling is unavoidable it shall be executed only with prior permission of the Architect.
	All cutting and drilling shall be predetermined and suitable sockets and specials shall be employed to effect necessary connections. All cutting and drilling shall be executed by skilled workmen with proper tools.
	The disturbed surface shall be restored to the satisfaction of the Architect.
2.8	**Marker Plates**
	DELETED
2.9	**Laying of Pipe sand Jointing of Pipes**
a)	**General:** The pipes shall generally be laid with sockets leading uphill and shall rest on solid and even foundations for the full length to the barrel. To accommodate sockets, depressions shall be formed in the foundation sufficiently deep to allow ample space for the pipe joiner to work right round the pipe. Each separate pipe shall be individually set for line and levels as described under `Alignment and Grade' and `Setting out'. Pipes shall always be installed in accessible positions, except where absolutely and necessary and indicated the pipes shall be installed in wall chase/floor.
b)	DELETED
	DELETED
	DELETED
	DELETED
c)	**Cement Concrete Pipes**: Concrete pipes shall be laid and jointed as described in IS: 783-1959. Code of practice for laying of cement concrete pipes.

	DELETED					
	DELETED					
d)	**Cast Iron Pipes**: C.I. pipes shall be laid and jointed in conformity with the code of practice for laying of cast iron pipes IS: 3114-1965. C.I. pip shall be jointed by best quality caulking lead free from all impurities. I wet trenches, joints shall be made with lead wool. The spigot shall be centered in the adjoining socket by tightly caulking in sufficient turns of tarred gasket to leave unfilled the required depth of socket for lead. Where the gasket has been caulked tightly home, a jointing ring shall be placed round the barrel and against the face of the socket. Molten lead shall then be poured into fill the remainder of the socket in one operation, the lead shall then be solidly caulked with suitable tools by hammering right round the joint, to make up for the shrinkage of the molten metal on cooling and shall finish 3 mm behind the socket face.					
	Lead for caulking shall conform to IS: 782-1966. The quantity of lead to be filled per joint in various sizes of C.I. pipes shall b as follows:					
	i)	Drainage pipes				
		50 mm (2") pipe		0.6 kg/Joint (35 mm deep)		
		80 mm (3") pipe		1.2 kg/Joint (40 mm deep)		
		100 mm (4") pipe		1.5 kg/Joint (45 mm deep)		
		150 mm (6") pipe		2.4 kg/Joint (45 mm deep)		
	ii)	Water Main Pipes		Lead/Joint		
		80 mm (3") pipe		1.8		
		100 mm (4") pipe		2.2		
		150 mm (6") pipe		4.4		
		200 mm (8") pipe		5		
	The joints and pipes laid for water supply system shall be tested to a pressure of 12 kg/sq. cm. for two hours without developing leaks / fall in pressure. The drainage pipe lines and joints shall be tested to a head of 150cms for two hours without developing leaks / fall in pressure. In case of leaks the piping shall be redone in such portion and the test repeated till achieving satisfactory result.					
e)	**Galvanized Steel Pipes**: Galvanized steel pipes shall be jointed with screwed and socket joints, using screwed fittings. Care shall be taken to remove any burr from the ends of the pipes after thread cutting. While lead or an equivalent jointing compound of proprietary make shall be used, according to the manufacturer's instructions, with a grommet of a few strands of fine yarn while tightening. Compounds containing red lead shall not be used because of the danger of contamination of water. Any threads exposed after jointing shall be painted with bituminous paint to prevent corrosion.					

	Pipes and joints laid for water supply system shall be tested to a pressure of 7 kg. per sq. cm and that of fire fighting system to a pressure of 10.50 kg per sq. cm. for two hours without developing leaks / fall in pressure. In case of leaks the piping shall be redone in such portions and the rest repeated till achieving satisfactory result.
f)	**Mild Steel Pipes**: Mild steel pipes and fitting shall be generally jointed by welding unless otherwise specified. All welding shall be done by qualified welders in accordance with Indian Standard IS: 823-1964. All welded joints shall be tested to a pressure of 15 kg. per sq.cm. for two hours without developing leaks/fall in pressure. In case of leaks the piping shall be redone in such portions and the rest repeated till achieving satisfactory result.
g)	**Copper Pipes**: Copper pipes and fittings shall be jointed either by compression joints or capillary joints as recommended by the pipe manufacturer. Screw threading shall not be done. Connections to pillar cocks, stop cocks and other water fittings shall be effected by using standard coupler as recommended by the manufacturers shall be utilized. Compression joints shall be of the manipulative type. The copper pipes and joints shall be tested to a pressure of 7 kg. per sq.cm. for two hours without developing leaks/fall in pressure.
	In case of leaks the piping shall be redone in such portions and the test repeated till achieving satisfactory result. Copper pipes shall be held in position by brass on copper clips. The piping should be supported at an interval of 150 cms. by approved saddles. Proper tools and suitably trained labour shall be employed for laying and jointing copper pipes.
h)	**PVC Pipes**: PVC pipes and fittings shall be laid and jointed by skilled workmen strictly as per the instructions of manufacturer. The installed piping system shall be subject to a low pressure testing of 4 kg/sq.cm. and then to high pressure testing of 7 kg/sq.cm. without developing leaks/fall in pressure. PVC pipes shall not be laid bare exposed to sun or mechanical injuries.
i)	**Asbestos Cement Pressure Pipes**: AC pressure pipes shall be laid and jointed as per manufacturer's instructions. Suitable specials. C.I. detachable joints, joint collars, rubber rings, mild steel bolts ad cement concrete thrust pads shall be provided adequately to ensure that the piping system perform efficiently under the working conditions. The asbestos pressure pipes and joints shall be tested to a pressure of 7 kg. per sq.cm. without developing leaks / fall in pressure.
j)	**Pipe Insulation**: Hot water pipes shall be provided with insulation as described below:
	Before applying insulation, all pipe work and fittings shall be brushed and cleaned, all dust, dirt, mortar and oil removed. The pipes shall then be cleaned with chemical solution suitable for the material of the pipe. Where insulation is to be applied over copper pipes, fibre glass wool of suitable thickness shall be applied over the entire wool of suitable thickness shall be applied over the entire run of piping. In case of mild steel and galvanized pipes, the pipes shall first be given a cost of zinc chromate primer followed by two coats of approved synthetic enamel paint. Insulation consisting of fibre glass wool of suitable thickness shall then be applied over the piping system. Fibre glass shall have a density of 25 kg/cm and `K' value of 0.404 MW/CM/Co. Polythene sheets shall then be wrapped round the above and held in position by galvanized chicken mesh. Cement plaster 1:3 (1 cement : 3 coarse washed sand) shall then be applied over thickness mesh in two coats to a minimum thickness of 20 mm.

	The thickness of insulation to be applied shall be as follows:					
	Sizes of pipes / fittings			Thickness of Insulation		
	15 mm / 20 mm dia			20 mm		
	25 mm, 32 mm and 40 mm dia			25 mm		
	Over 40 mm dia			40 mm		
	The insulation shall be continuous over the entire run of piping, fittings and valves. The insulation shall be applied only after the piping systems are satisfactorily tested for the desired working pressure. The completed insulation shall restrict the heat loss heat gain in the piping system to the absolute minimum. The total heat gain or heat loss by the insulated piping system shall not exceed thirty per cent of the heat gain or heat loss by a similar un-insulated piping system.					
	Insulation work shall be carried out by skilled workmen special trained in this kind of work.					
2.1	**Valves**					
	Valves shall be provided of accessible location on every branch from main lines as shown in the drawings. In case of valves with screwed female inlet / outlet, each valve shall be provided with a union, on either side and installed in piping system. On external lines. Valves shall be installed in brick masonry chambers with a frame and cover as shown in the drawings.					
3	**PIPING SYSTEM - INSTALLATION, INSPECTION AND TESTING**					
3.1	**Soil, Waste, Vent & Anti syphon Pipes**					
	Unless specified otherwise all soil and waste pipes in shafts, ducts and in concealed locations e.g. (false ceiling) shall be of sand C.I. pipes, and that located in basement floor /service floor shall be of C.I. spun pipes class `LA'.					
	The soil pipe shall be of minimum diameter of 100 mm and waste pipes 80 mm. Pipes shall be fixed by means of stout clamps in two sections, bolted together, built into the walls, welded and neatly pointed as directed and approved by the Architects, keeping 50 mm distance from the walls.					
	Where indicated, the soil and waste pipes shall be continued upwards without any diminution in its diameter, without any bend of angle to the height shown in the drawings.					

	Unless specified otherwise solid and waste pipes from urinal / wash basin / sinks up to the floor trap shall be of GI medium class pipes. All the traps of water closets and urinal traps shall be provided with anti siphon / relevant pipes as shown in the drawings and as directed by the Architect. All terminal manholes shall be provided with vent pipes. This may be dispensed with if the upper floor solid stacks connecting to such manholes are vented. All soil, waste and vent pipes shall be given two coasts of approved paint.
3.2	All connections, between soil, waste and ventilation pipes and branch pipes shall be made by using pipe fittings with inspection and doors and cleaning. The doors shall be provided with 3 mm thick rubber insertion packing and when closed and bolted shall be air and water tight.
	Where soil, waste and ventilation pipes are accommodated in shafts / ducts, adequate access to cleaning eye shall be provided.
3.3	**Cold Water Supply Pipes**
	A water supply piping system to cater for all domestic, requirements shall be as called for on the drawings. Unless specified otherwise the piping system shall consist of galvanized steel pipes and fittings of medium class and C.I. spun pipes and fittings of water mains (Class LA) quality. As far as possible, all piping inside the buildings shall run in shafts or ducts provided for this purpose. No unsightly exposed runs will be permitted. Outside the buildings, the piping shall be installed as far as possible 60 cm. below finished grade. Where called for all galvanized steel piping embedded either in trenches or in concrete and masonry work shall be tightly wrapped with 1 mm thick fibre glass tissue sheathing laid in bitumen. Gate valves (built into chambers where required) shall be provided as indicated on the drawings to regulate the flow of water.
	The piping shall be given two coats of approved paint as mentioned under painting and colour coding. All C.I. pipes buried of a embedded shall be given two coats of bitumastic paint.
3.4	**Water Storage Tanks**
	DELETED
3.5	**Hot water supply**
	A hot water supply system consisting of galvanized steel pipes and fittings of heavy class (C) shall be installed by the Contractor. In walls, these shall be wrapped with 1mm thick fibre glass tissue set in bitumen. Adequate number of expansion fittings shall be provided to take care of expansion and contractor. Air lock releasing devices and de watering / blow / off devices at suitable points shall also be provided in the piping system.
	The completed hot water piping system shall be tested to the test pressure mentioned under laying of pipes for two hours without any fall in pressure. The insulated piping system shall be given two coats of approved paint.

3.6	**Rain Water Pipes**					
	DELETED					
3.7	**Storm Water Drainage**					
	DELETED					
3.8	**Colour Code Identification**					
	All piping shall be colour coded as per IS 2065-1972.					
4	**ANCILLARY STRUCTURE**					
4.1	**Manhole**					
	DELETED					
4.2	**Gully Traps**					
	DELETED					
4.3	**Grease Traps**					
	DELETED					
4.4	**Catch Basin**					
	DELETED					
4.5	**Intercepting Tap**					
	DELETED					
	DELETED					
4.6	**Septic Tank**					
	DELETED					
4.7	**Soak Pits**					
	DELETED					
5	**SANITARY FIXTURES AND FITTINGS**					
5.1	**Installation of Fixtures and Fittings**					
	All plumbing and sanitary fixtures and fittings shall be stored in covered stones and handed carefully to prevent damage. The sanitary fittings shall be installed at the correct assigned positions as shown on the drawings and as directed by the Architects and shall fully meet with the aesthetic and symmetrical requirements as demanded by the Architect. Fixtures shall be installed by skilled workmen with appropriate tools, according to the best practice in the trade, Manufacturer's instructions shall be followed for the installation of the fixtures.					

	Fixtures in all toilets shall be standard height mounted rigid, plumb and true to alignment. The outlets of water closet pans and similar appliances shall be examined to ensure that outlet ends are abutting properly on the receiving pipes before making the joint. It shall be ensured that the receiving pipes are clear of obstruction. When fixtures are being mounted, attention shall be paid to the possibility of movement and settlement by other causes. A check shall be made to ensure that necessary anchoring devices have been provided for supporting water closets, lavatory, basins, sinks, flushing cisterns and other appliances. Where the built in types of brackets are used, they shall be securely fixed to the slabs and walls by approved means. It shall be ensured that while fixing the fixtures and fittings no toll marks or scratch are developed.
5.2	**Protection of Fixtures**
	Care shall be taken at all times, particularly after fixing to protect fixtures from damage. All orifices shall be temporarily plugged during progress of work to prevent obstruction. Fixtures shall be finally cleaned to the satisfaction of the Architect.
6	**MISCELLANEOUS**
6.1	**Connection to RCC Water Tanks**
	The contractor shall provide all inlets, outlet, washouts, vents, ball cocks, overflow, control valves and all other piping connections including level indicator to water storage tanks as called for.
	Suitable float controls of an approved make, securely fixed to the tank and set in a position that water inlet into the tank is cut off when filled up to the full water line. The water level in the tank shall be adjusted to 25 mm below the line of the overflow pipe. Fullway gate valve of approved make shall be provided as near the tank as practicable on every outlet pipe from the storage tank except the overflow pipe.
	The overflow pipe shall be placed as to allow the discharge of water being readily seen. The overflow pipe shall be of size indicated. A stop valve shall also be provided on the inlet water connection to the tank.
	The outlet pipes shall be fixed above the bottom of the tank as indicated. A washout pipe shall be provided at the bottom of the tanks towards which the floor of the tank is slopping to enable the tank to be emptied for cleaning.
6.2	**Connections to Pools and Cooling Towers etc.**
	The contractor shall provide water supply and waste disposal connections to the various pools and cooling towers as shown on drawings.
6.3	**Connection to Mechanical Equipment Supplied by other Agencies**
	All inlets, outlets, valves, piping and other incidental work connected with installation of all mechanical equipment supplied by other agencies shall be carried out by the Contractor in accordance with the drawings, requirements for proper performance of equipment, manufacturer's instructions and the directions of the Architect.

	The equipment to be supplied by other agencies consist mainly of kitchen, laundry, air-conditioning, boiler, water treatment, sewerage treatment, swimming pool and other similar equipment. The connections to the various equipment shall be either with union or with flange. The work of effective connections shall be executed in consultation with and according to the requirements of equipment supplies, under the directions of the Architects. The various aspects of connection work shall be executed in a manner similar to the work of respective trades mentioned elsewhere in these specifications.
6.4	**Disinfections of Piping System and Storage Tanks**
	Before commissioning the water supply system, the contractor shall arrange to disinfect the entire system as described in the succeeding paragraph. The filtered water and thoroughly flushed out. The storage tanks shall then be filled with water again and disinfecting chemical containing chlorine added gradually while tanks are being filled, to ensure through mixing. Sufficient chemical shall be used to give the water a dose of 50 parts of chlorine to one million parts of water. If ordinary bleaching powder is used, the proportion will be 150 grams of powder to 1000 litre of water. The powder shall be mixed with water to a creamy consistency before being added to the water in the storage tank. If a proprietary brand of chemical is used the proportions shall be as specified by the makers. When the storage tank is full, the supply shall be stopped and all the taps on the distributing pipes opened successively, working progressively away from storage tank.
	Each tap shall be closed when the water discharge begins to smell of chlorine. The storage tank shall then be filled up with water from supply pipe and added with more disinfecting chemical in the recommended proportions. The storage tank and pipe shall then remain charged at least for three hours. Finally the tank and pipes shall be thoroughly flushed out before any water is used for domestic purposes.
7	**Mode of Measurement**
7.1	**Pipes**
	All pipes viz. stoneware, RCC, AC, PVC, GI, MS, CI water main pipes etc. shall be measured in linear lengths along the centre line inclusive of all fittings e.g. elbows, tee, bend, reducers, bushes, unions, etc. The rates shall include also the cost towards hangers, clamps, making chase / holes in walls / labs and bringing them to original condition and shape. Deductions in length of pipes shall be made on account of manhole chambers. Unless specified otherwise excavation and refilling shall be measured separately.
7.2	**Fixtures**
	All fixtures shall be measured in numbers along with the fittings as specified in the respective items of schedule. The rate of fixtures shall also include cost towards mounting brackets, painting to brackets, excavation and bedding concrete.
7.3	**Brass / Chromium Plated Fittings etc.**
	All the fittings shall be measured in numbers with the accessories as specified in the respective items of schedule.

7.4	**Valves**					
	Valves shall be measured in numbers. These shall be of flanged type or down type as specified in the schedule. Rate of flanged valves shall be also include cost towards the flange provided on both the sides on pipes, gaskets, drilling holes and providing bolts and nuts.					
7.5	**Ancillary Structures**					
	All ancillary structures viz. manholes, gully traps, valves, chambers, catch basins shall be measured in numbers, including all the items specified in the schedule against the respective items. Earth work in excavation and refilling for ancillary structures shall be measured separately.					
7.6	**Earth work in Excavation and Back Filling**					
	DELETED					

Specification for electrical

SPECIAL CONDITIONS OF CONTRACT

The conditions and directions listed in this Section shall be considered as an extension to and not as a limitation of the obligations of the Contractor.

The specifications generally applicable to this work shall be as per C.P.W.D. specifications for electrical works in India except as otherwise specified in the description of items given in the Schedule of Quantities or in the General and Technical Specifications. These specifications will override the C.P.W.D. specifications. The requirements of these specifications will be fulfilled by the contractor within the tendered rates and without any extra charge. The item rates quoted will be deemed to have taken these specifications into account.

1. The electrical work will be carried out in accordance with the General Specifications 1972 with amendments up to date for electrical works in Central Government buildings while complying in all respects with the requirements of the latest Indian Electricity Rules in force at the time of execution.

2. The electrical work shall be carried out simultaneously with the building work and will be continued till it is completed satisfactorily along with the completion of essential portions of building work.

3. If any minor alterations are found necessary, the contractor shall do the same within tendered rates.

4. The work shall be carried out in the best workmanlike manner and any defect in the work or changes in the design etc., if pointed out shall be carried out by the contractor within the tendered rates.

5. The contractor shall employ adequate labour to complete the work within the stipulated time and make his own arrangements for housing labour and storage of materials etc. A full time Electrical Supervisor/ Engineer shall be employed by the contractor who will remain at site of work to receive orders or any other instructions from the Architects/ Engineer-in charge.

6. During the progress of work, completed portions of the buildings may be occupied and put to use by the owner but contractor will remain fully responsible for maintenance of the electrical installations till the entire work covered by this contract is satisfactorily completed by him and taken over by the Employer.

7. The contractor shall obtain for himself, on his own responsibility and at his own expense, all the information which may be necessary for the purpose of tendering and for entering into a contract, and must inspect the site, examine and study the specifications, drawings and the design of the electrical installations, the building plans etc. If the drawings are supplied to the contractor for tender purposes, the same must be returned in good condition with the tender. The contractor shall also make local and independent inquiries, if required. All tender rates will include the cost of materials, erection connections, labour, supervision, tools, plant, transport, all taxes, contingencies, breakage, wastage, sundries, scaffolding and maintenance of installation for one year i.e. they should be for an item complete in all respects.

8. The contractor, while executing the work, shall conform to the provision of Government Acts relating to the work and to the regulations and Bye-laws of the local authorities, and of the company to whose system of supply the installation is proposed to be connected. The contractor shall give all notices, required by the Acts, Regulations or Bye-Laws. He will also undertake to provide test certificates and drawings as required and will make necessary arrangements to procure the electricity supply. The contractor shall also obtain all approvals for the items of work done under this contract from the appropriate authorities. All inspection fees or submission fees paid by the contractor.

9. Reimbursed by the owner against valid official receipts. Contractor shall possess a valid electrical contractor's license issued by the inspectorate of the local government.

10. Samples of materials and fabrication drawings will be submitted by the contractor according to the schedule specification. Any deviation from the schedule/specifications must have the written consent of the Architects/ Engineer-in-charge. No approval given by the Architect/ Engineer-incharge to any samples or drawings submitted by the contractor shall in any way exonerate the contractor from his liability to carry out the work in accordance with the terms of contract.

11. DRAWINGS :

a) Shop Drawings: The contractor will submit four sets of shop drawings for all panels (and list of operations for DG and associated panels) and other fabricated items which must contain details of general arrangement drawings with dimensions, clearances, loading details, foundation details, HV and LV cable box details, etc. with required copies. Minimum three sets of test certificates shall also be furnished by the tendered. *These drawings and other literature shall be submitted in advance for approval.*

b) Completion Drawings: The contractor shall submit one complete set of original tracings and further two copies of final existing layout drawings to the Architect /Engineer in-charge after completion of the work. No completion certificate will be issued until the completion drawings are submitted. The drawings will be prepared and submitted by the contractor without extra charge.

12 DELETED

13. PROGRESS AND TIME OF COMPLETION:

a) The work will commence immediately after the Contractor receives instructions to proceed. The Contractor will work in co-operation with the building Contractor and other Contractors and shall arrange to place his conduits in the masonry and concrete work as the building or other work proceeds. Any hold up of the building or other work because of delay in laying of conduits or otherwise, shall be the responsibility of the electrical contractor and will make him liable for damages if any, by the Employers.

b) The contractor shall consult the Employer and draw up a time schedule on commencement of the work. This time schedule shall be strictly adhered to.

14. COMPLETION TESTS:

On completion of installations the following tests shall be carried out:-

a) Insulation Resistance Test;

b) Polarity Test of Switch;

c) Earth Continuity Test.

15. MAINTENANCE:

The completed installation inclusive of wiring, light fittings and fans (where supplied by the contractor) shall not be finally taken over and acceptance certificate issued to the contractor until the expiry of the Defects Liability Period. During this period the contractor shall be liable for:

a) The replacements of any defects that may develop in goods of his own manufacture or supplied by him.

b) The rectification of all the defects arising out of defective workmanship of the Contractor.

c) Bringing to the notice of the Employer any defects arising out of materials supplied by the owner. The Employer shall provide replacement of such material. Until the installation is finally taken over, the contractor shall have the right of entry to the premises, at his own risk and expense, for maintaining the installation in proper order. To facilitate maintenance the Contractor should clearly indicate the detailed distribution diagram on every Panel, Distribution Board and Sub- Distribution Board.

16. POSITION OF LIGHTING, DISTRIBUTION BOARDS AND SWITCHGEARS:

a) The recommended positions of the lighting points, control switches, distribution boards and switchgears as shown on the layout drawings will be generally adhered to.

b) Should there be any discrepancy or incomplete description, ambiguity or omission in the drawings and other documents, whether original or supplementary, forming the contract, completion or maintenance of the installation, the contractor shall immediately, on discovering the same, bring it to the attention of the Employer.

c) Prior to the installation of lighting, fan and plug points and telephone, TV, data on other outlets the distribution boards, switches etc., final positions shall be ascertained by the contractor with the Employer.

d) The dimensions and other details of the electrical drawings shall be compared with the civil drawings at site before execution of the work.

17. PAINTING AND MARKING:

All exposed steel work not actually embedded in the building construction (viz. conduits, junction boxes.) will be painted with one coat of primer and two coats of synthetic enamel paint in shades decided by the Employer. The paint will match the existing shades of walls unless otherwise instructed. This work will be done by the Contractor without extra charges.

18. All Panels, MDBs, SDBs and final DBs etc. shall be properly painted, labelled and numbered as detailed in the Technical Specifications.

19. MODE OF MEASUREMENT:

All works carried out shall be physically measured at site and paid for as per the units defined in the schedule of quantities and on the basis of actual measurement. The quantities mentioned therein are indicative and do not purport to be an accurate estimate of the actual quantities required. The contractor shall ensure at his own risk that proper information with regards to routing and locations of various systems and components is known prior to ordering materials.

20. COORDINATION WITH OTHER AGENCIES:

The contractor shall coordinate with other agencies and ensure that following provisions are made:

i) Cut outs for risers, trenches etc.

ii) Proper space for DBs and all switchboards.

iii) Recesses required for fitting in the slab/false ceiling.

INTERPRETATION OF WORK AND I.S.I. STANDARD:

In the interpretation of specifications or items which are incomplete or where there are discrepancies or conflicts or may otherwise be subject to dispute, the following order of decreasing importance shall prevail:

a) Items as detailed in “Good For Construction” drawings.

b) Description of items in the schedule.

c) Special Specifications and Annexure (if any) attached to the tender.

d) C.P.W.D specifications for electrical works amended up to date.

e) Indian standards specifications.

f) Anything not covered by the above shall be as per I.E. Rules and regulations.

SCOPE OF WORK

The general character and scope of work to be carried out under this contract is illustrated in the Schedule of Quantities and drawings. Contractor shall carry out and complete the said work under this contract in every respect and to the satisfaction of the Employer. In general the work to be carried out shall comprise:

a) Complete installation of all internal electrification for light points, light plugs, power plugs, all types of utility outlets, call-bell points, ceiling/ exhaust fans, etc.

b) Supply and installation of Cable tray, Submains & cables.

c) Supply and installation of all Distribution Boards, Sub-Distribution Boards and LT Panels etc.

d) Supply and installation of complete conduiting and wiring for low voltage systems -telephone, MATV, data networking, music, security and CCTV systems.

e) Supply and installation of complete earthing systems.

f) Supply and installation of fans and lighting fixtures including those supplied by owner.

g) Supply and installation of all external cabling, lighting fixtures, poles and feeder pillars. Construction of trenches and laying of cable tray and support structures for HV / LV cables.

h) Supplying and laying underground LT / HT cables.

RELEVANT I.S. STANDARDS

1. PVC insulated (Heavy duty) electric cable for working Voltage up to and including 1100 V (revised) I.S. 1554-1988

2. PVC insulated cables (for voltages up to 1100v) I.S. 694-1977

3. Rigid steel conduits for electrical wiring (second revision) I.S. 1653-1972

4. Accessories for rigid steel conduits for electrical wiring. I.S. 3837-1976
5. Boxes for the enclosure of electrical accessories. I.S. 5133-1969
6. 3 pin plug & socket outlets. I.S. 1293-1988
7 Adhesive insulating tapes for electrical purposes. I.S. 2448-1968
8 General safety requirements for electrical lighting fitting. I.S. 1913-1969
9 Electric ceiling fans and regulators I.S 347-1979
8. Propeller type AC ventilating fan I.S. 2312-1967
9. Code of practice for earthing. I.S. 3043-1966
10. Code of practice for safety of building (General electrical installation.) I.S. 1646-1961
11. Air break switches & Fuse combination units For voltage not exceeding 1000V AC or 1200V DC. I.S. 4064-1976
12. HRC Cartridge fuse link upto 650V I.S. 9224-1979
13. Protection of Building and allied structures against Lighting I.S. 2309-1969
14. Fitting for rigid steel conduits for electrical wiring I.S. 2667-1976
15. Heavy duty Air break switch & complete unit of air break Switches and fuses for Voltage not exceeding 1000 Volts. I.S. 4064-1978
16. General requirements for switchgear & control gear for Not voltage not exceeding 1000V I.S. 4237-1982
12. Switch socket outlet I.S. 4615-1968
13. Power Transformer I.S.20-1977 to 81 (Part I to IV)
14 AC Metal clad enclosed switch gear and control gear for rated voltage above 11KV and up to including 52KV. I.S. 3427-1997
TECHNICAL SPECIFICATIONS
I CONDUITS, WIRING, SWITCHES AND ACCESSORIES
1. PVC CONDUITS:
These shall be hot extruded pipes made from virgin PVC. The pipes shall be unplasticized, rigid, and free from filler material and stabilized against decay by ultra violet radiation. The pipe must afford the facility of cold bending at site. The conduit shall have a proper circular section and consistent wall thickness. All parameters shall conform to the relevant IS code. The bends shall be made by the same manufacturer, due care having been taken to ensure even wall thickness throughout. The bends shall be properly and concentrically belled for at least the same length as the pipe diameter and shall afford a close tight fit of the pipe into it. The conduit system shall be so laid out so that it will obviate the use of tees, elbows and sharp bends.
2. **M.S. STEEL CONDUITS:**
These shall be mild steel with 16 Gauge wall thickness for all sizes, welded, electric thread type class 'B' having perfectly circular tubing and light fitting joints. The conduit shall be protected from just by one coat of black enameled paint applied inside and outside in it's manufactured from. No steel conduit less than 19mm in diameter shall be used. Bends shall be of 16-gauge wall thickness and as far as possible the conduit system shall be so laid out that it will avoid the use of tees, elbows and sharp bends.
3. **CEILING OUTLET BOXES:**

Outlet boxes shall be of sufficient depth and made of Cast Iron and so installed as to maintain continuity throughout. These shall be so protected at the time of laying that no mortar finds its way inside during concrete filling or plastering. For each fluorescent fittings two outlet boxes shall be provided one foot off center for a four feet fitting and 6" off center for 2 feet fitting.

4. **DRAW BOXES:**

M.S. Draw boxes/junction boxes of ample dimensions shall be provided at convenient points on walls/ceiling to facilitate pulling of long runs of cables/ wires. They will be completely concealed and covered with hylam covers flush with plasterwork. These boxes will be as few as possible. All the M.S. Boxes used for housing switches, plugs, drawing of wires etc. shall have metal on all sides except in front.

5. **SWITCH BOXES:**

M.S. boxes of required sizes shall be provided to house the speed regulators, switches and sockets.

6. **ERECTION:**

a) Conduits shall be laid in perfect fashion as instructed duly saddled and fastened to the wall/ ceiling in a neat and proper manner in accordance with approved drawings. If required to run in the wall or in the floor filling, the same must be carried out neatly and with proper

b) workmanship so as to conceal the entire run of conduits and ceiling outlet boxes. Wherever necessary, chases will be cut by the contractor to sufficient depth to allow full thickness of plaster over conduits. Width of the chase will be made to accommodate the required number of conduits. The chases will be filled with cement and mortar (1:3) and properly cured by watering. If a chase is cut in an already finished surface the contractor shall fill the chase and finish it to match existing finish within the tendered rates. When the conduit is to be embedded in a concrete member it shall be adequately tied to the reinforcement to prevent displacement during casting.

Conduits in chaises or laid above the slab, shall be held by hooks spaced at a maximum of 1500mm center to center. When the conduit is laid above the slab the same shall be covered with cement concrete mixture 1:3:6 using 1/4" thick stone aggregate and coarse sand. When the conduit has to run on the surface, i.e., above false ceilings, it shall be fastened to the Concrete slab using mechanical fasteners Suitable expansion joints fittings shall be provided at all the points where the conduit crosses any expansion joint in the building.

c) The conduit shall have ample sectional area to facilitate the drawing of cable. The contractor should refer to the table given below for the laying of wires:

Nominal cross sectional		**Conduit size (PVC/M.S.)**				
Area of conductor	**inches**	**19/20**	**25/25**	**32/32**	**38/40**	**50/50**
Sq. mm						
1.5	3/. 029	4	8	12	-	-
2.5	3/. 036	3	6	10	-	-
4.0	7/. 029	2	5	8	-	-
6.0	7/. 036	-	4	7	-	-

10.0	7/. 044	-	3	5	6	-
16.0	7/. 064	-	2	3	5	7
25.0	19/. 044	-	-	2	3	6
35.0	19/. 064	-	-	-	2	5

Note: The above shows the maximum capacities of conduits for a simultaneous drawing in of cables. The table applies to 1100volts grade PVC insulated copper/ aluminium conductor cables.

d) All boxes shall have ample space at the back and on the sides for accommodating wires and checkout entries. Those shall be completely concealed having edges flush with wall surface. Cover plate shall be fixed to these by means of brass machine screws. No timber shall be used for any support. The boxes shall be painted before and after erection.

e) The entire conduit systems including outlets and boxes shall be thoroughly cleaned after completion of erection and before drawing of cables.

7. **SWITCHES, SOCKETS AND REGULATORS:**

All switches, sockets and regulators shall be flushed with wall at the heights mentioned unless directed otherwise. The mounting shall be done on the prescribed grid plates using the correct accessories and tools specified by the manufacturer.

8. **CABLES:**

All cables shall be 1100V and shall have been manufactured in accordance with the latest I.S specification.

9. **POINT WIRING:**

The point wiring shall be carried out in the under mentioned manner each of which conform to the given specifications.

a) In concealed/ surface system including providing and fixing of conduits, bends, junction boxes, check nuts, PVC bushes etc.

b) Loop system will be adopted (only in the outlet boxes for neutral wire and in the switch box for live wires) throughout including supplying and drawing of required sizes of wire without damaging the same.

c) Each circuit will have independent neutral wire and will be complete up to outlet box and switch box. The point will be complete with conduit including accessories and wires, necessary junction boxes, outlet boxes and switch boxes, connectors or ceiling roses, switches, switch plates and flush plates including necessary earthling and connection etc. The installation generally will be carried out in conformity with the Indian Electricity Act and IS specification.

d) Wiring for light, fan, convenience plug point (5A) etc. will be as above. The size of wire shall not be less than 1.5 sqmm or as specified against each item.

e) The light plug points shall be complete with 3pin 5 A plug socket and switch enclosed in an M.S. galvanized box with the controlling switch as required and the third pin shall be earthed as specified with copper earth wire.

f) The fan point shall have a provision in the switch box for mounting the regulators, unless directed otherwise.
g) Wiring for power plugs shall be as above. Each circuit shall have one or two plug points as required and each point shall be earthed with a minimum size of 2.5 sq mm copper conductor flexible insulated wires. All such earth wires shall be of green colour. The point shall be considered complete with circuit, 3 pins 15 A plug socket and switch mounted in a galvanized M.S box with flush plates. Wiring for power plugs shall be as described in Schedule of Quantities.
h) Separate and independent conduits will be used for each of the following systems:
i) Lighting system.
ii) Power system.
iii) Telephone system.
iv) Computer system.
v) Fire Detection system
vi) Music, Security and CCTV
The rate per point shall include all materials and labour required for completing the points as mentioned above. Measurements will be in numbers of each kind of point.
II MAINS AND SUBMAINS:
Mains and sub-mains shall consist of wires, cables and conduits, bends, junction boxes, rubber bushes, check-nuts etc. As specified before. The sizes and capacities of conduits and wires shall be as stated in the schedule of quantities and will commence from the main switches to the various distribution boards. Wires shall be drawn in concealed or surface conduits as required without being damaged. For this purpose draw boxes shall be located at convenient but not in conspicuous places. Every main and sub main will run in an independent conduit. Necessary provisions of wire lengths entering and emerging from the conduit must be made for connections. Colour code for phase and neutral are to be followed i.e. only RED, YELLOW, BLUE, BLACK and GREEN colour wires are to be used for the three phase colors, neutral, and earth conductor respectively. Measurements will be taken of the actual conduit run containing the wires from one switchgear to another. Per meter rate shall include all materials, connections, labour etc. as specified above.
III CABLE WORK:
1. **STORAGE AND HANDLING:**

Cable drums shall be stored on a well-drained, hard surface, preferably crete, so that the drums do not sink into the ground causing rot and damage to the cable drum. During storage, periodical rolling of drums once in 3 months through 90 degree shall be done specially in the case of paper insulated cables. Rolling shall be done in the direction of the arrow marked on the drum. It should be ensured that both ends of the cables are properly sealed to prevent ingress/absorption of moisture by the insulation. Protection from rain and sun is preferable. Sufficient ventilation between cable drums should be ensured during storage. The drums shall always be rested on flanges and not on flat sides. While removing cables the drums shall be properly mounted on jacks or on a cable wheel or any other suitable means making sure the spindle, jack, etc. is strong enough to take the weight of the drum. The cables shall not be sharply bent within a small radius. The minimum safe bending radius for all types of PVC cables shall be taken as 12 times the overall diameter of the cable. Wherever practicable, large radius should be adopted. At joints and terminations, the bending radius of individual cores of mullet-core cables shall not be less than 15 times its overall diameter. Cables with kinks and straightened kinks or with similar apparent defects like defective armouring etc. shall not be installed.

2. **INSTALLATION:**

The cables installation including necessary joints shall be carried out in accordance with the specifications given herein. For details not covered in the specification, IS 1255-1967 shall be followed. Before the cable laying is undertaken, the route of the cable shall be decided by the Engineer-in-charge. While shortest practical route should be preferred, cable runs shall generally follow fixed developments such as roads, foot paths etc. Cables of different voltages and also power and control cables should be kept in different trenches with adequate separation. Where available space is restricted, LV/MV cables shall be laid above HV cables. Where cables cross one another, the cable of higher voltage shall be laid at a lower level than the cable of lower voltage.

3. **LAYING ON SURFACE:**

The cables may be laid through in trough or brackets at regular intervals or directly cleared to wall/ ceiling. When laid over bracket supports the cables shall be clamped to prevent undue sag. Cable clamps shall be made from materials such as galvanized mild steel, or PVC or Nylon ties. In case of single core cables the clamps shall be of non-magnetic materials. A suitable non-corrosive packaging shall be used for clamping unarmoured cabled to prevent damage to the cable sheath. Wherever more than one cable is laid/ run side by side, marker tags as approved inscribed with cable identification details shall be permanently attached to all the cables in the manholes/pull pits/joint pits/entry points in buildings/ open ducts etc. These shall also be attached to various cables laid direct in ground at suitable intervals as decided by the Engineer-in-charge before the trenches are filled up.

Only licensed/experienced cable jointer shall carry out jointing work. Sufficient ventilation shall be provided during jointing operation in order to disperse fumes given out by fluxing. Jointing materials and accessories like conductor ferrules, solder flux and protective tapes, filling compound, jointing boxes etc. as right quality and correct sizes conforming to relevant Indian standards, wherever they exist shall be used.

The design of the joint box and the composition of the filling compound shall be such as to provide an effective sealing against entry of moisture in addition to affording proper electrical characteristic to joints. Where special type of splicing connector kits or epoxy resin spliced joints are specified, materials approved for such application shall be used and instruction of the manufacturer/supplier of such materials shall be strictly followed. Insulation resistance of cables to be jointed shall be measured with 500 V megger up to 1.1 KV grade and with 2500/5000 V megger for cables of higher voltage. Unless the insulation resistance values are satisfactory, jointing shall not be done. Whenever Aluminium conductor is exposed to outside atmosphere a highly tenacious oxide film is formed which makes soldering of aluminium conductor difficult. This oxide film should be removed using appropriate type of flux. The clamps for the armoured shall be clean and tight.

4. **CABLE JOINTING &TERMINAL**

Jointing shall be as per the manufacturer's recommendation using standard kits. Cable joints shall be made in suitable, approved cable joint boxes, jointing of cable in the joint boxes and filling of compound shall be done as per manufacturer's recommendation.

Cable shall be terminated onto the terminals of switchgear through cable lugs of proper size. Cable lugs shall be fitted onto the cable by crimping or compression jointing.

5. **TRENCHING & CABLE LAYING**

The minimum width of trench shall be 45 cm and depth shall be 75cm for lying of cable. Where more than one cable is to be laid in the same trench in horizontal formation, the width of trench shall be increased such that the inter-axial spacing between the cables, except where otherwise specified, shall be at least 20 cm. There shall be a clearance of at least 15cm between axis of the end cables and the sides of the trench. The trenches shall be excavated in reasonably straight lines. Where there is a change in direction, suitable curvature shall be provided.

Where gradients and changes in depth are unavoidable, these shall be gradual. The bottom of the trenches shall be level and free from stone, brick, bats etc. The trench shall then be provided with a layer of clean, dry sand cushion of not less than 9cm in depth. Cable laid in trenches in a single tier formation shall have a covering of clean, dry sand of not less than 20cms. Above the base cushion of sand before the protective cover is laid.

In the case of vertical multi-tier formation, after the first cable has been laid, a sand cushion of 30cms shall be provided over the initial bed before second tier is laid. If additional tier are formed, each of the subsequent tier shall have a sand cushion of 30cms as stated above. The top-most cable shall have final and sand covering not less than 17cms before the protective cover is laid.

Unless otherwise specified, the cables shall be protested by second class brick of not less than 20cm x 10cm x10cm (nominal size) as per CPWD building specification, or protection covers placed on top of the sand, (brick to be laid breath wise) for the full length of the cable to satisfaction of the owner. Where more than one cable is to be laid in the same trench, this protective covering shall cover all the cables and project at least 5cm over the sides of and cables.

The trenches shall be then back filled with excavated earth tree from stone or other sharp-edges debris and shall be rammed and watered, if necessary, in successive layer not exceeding 30cm Unless otherwise specified, a crown of earth not less than 50mm in the center and tapering towards the sides of the trench shall be left to allow for substance. The crown of earth, however, should not exceed 10cms.

Where road bends or lawns have been cut or kerbstones displaced, the same shall be repaired to the satisfaction of the Architect and all surplus earth or rock removed to placed as specified. In locations such as crossing, entry to building in paved areas etc. cables shall be laid in pipes or closed ducts.

All cable entry / exit points into the building through pipe sleeves shall be properly sealed with bituminous resin in an approved manner to avoid any seepage of water into the building. Manholes of adequate size, as decided by the architect, shall be provided to facilitate feeding / drawing in of cables and to provide working space for persons. Suitable manhole covers with frame of proper design shall cover Manholes.

7. **CABLES OR HANGERS OR RACKS**

The contractor shall provide and install all iron hangers racks, or racks with die-cast cleat, with fixing rag bolts or ginger clamps or other specialist fixing as required. Where hangers or rack are to be fixed to wall sides ceiling and other concrete structures, the contractor shall be responsible for cutting away, fixing and grouting in rag bolts and making good the damages as required.

The hungers or racks shall be designed to leave at least 25mm clearance between the cables and the face to which it fixed. Multiple hangers shall have two or more fixing holes. All cables shall be saddled to not more than 150mm intervals. These shall be designed to keep provision of some spare capacity for future development.

8. **CABLE TRAY**

a) All cables trays shall be of minimum 2-mm thick MS sheet should have undergone rigorous rust proofing process, which should comprise of alkaline, degreasing, rescaling in diluted sulpharic b) acid and a recognized photophating process. The sheet work shall be then given two coats of final painting. Cable shall be either painted (Stove enameled) or hot dig galvanized as called for in the schedule of quantities.

c) Cable trays shall be complete with bends, joints, coupler plates and accessories as may be required for jointing the cable tray.

d) Cable tray shall be either perforated or ladder type as called for in the schedule of quantities.

9. **PERFORATED CABLE TRAYS**

Standard dimensions of perforated cable trays shall be as follows:

1. Width : 100mm to 1200mm
2. Length : 2500 mm
3. Thickness : 2mm up to 750mm width and 3mm from 900mm to 200mm
4. Coller height : 100mm
5. Cable tray : 2mm up to 750mm & 3mm above 750mm cover (if called for the schedule of quantities)

10. **LADDEER TYRE CABLE TRAYS**

Standard dimensions of ladder type cable trays shall be as follow:

SIZE OF TRAY	**SIZE OF MAIN CHANNEL**	**SIZE OF RUNG/ SPACING BETWEEN RUNGS**
900MM TO 1200MM	25 x 100 x 25 x 3cm	20 x 50 x20 x2 @ 200 / C
Up to 750mm	25 x 75 x 25 x 2mm	20 x 50 x20 x2 @ 200 / C

Sizes of angle for cable tray supports shall be minimum 40 x 40 x 5mm up to 600mm & 50 x 50 x 5mm minimum as specified in the drawing / schedule of quantities for sizes above 600mm. Hangers shall be minimum 10mm dia steel round bars as specified in the drawings / schedule of quantities. Contractor shall carry out 2 coats of primer and two coats synthetic enamel on all steel structures. Fixing arrangement shall be as approved by the Consultant. Hardware to be used in cable tray system shall be galvanized or zinc passivated. The testing on galvanized material if required shall be carried out as per IS: 2633, amended to date.

11. **CABLE TAGS**

Cable tags shall be made out of 2mm trick aluminium sheets. Each rags shall be 2" in die or 3" x 3"square with one hole of 2.5mm die 6mm below the periphery, or a approved by consultant. Cable designations are to be punched with letters / numbers punches and the tags are to be tried to cables with piano wires of approve quantities & size. Tags shall be tied inside the panels beyond the glanding as well as above the glands at cable entries. Along trays tags are to be tied at all bends. On straight lengths rags shall be provided at every 5meters. Cable shall be secured to cable trays with 3mm thick x25mm wide aluminium strip / suitable GI clamp, or as approved by Consultant, at 1000mm intervals and screwed by means of rust proof screws, washes and bolts, of adequate but not excessive lengths.

Cable trays for horizontal runs suspended from the ceiling will be supported with mild steel straps or brackets, at 1000mm intervals and the overall tray arrangement shall be of rigid construction. External cabling route marker with GI plate marked with "DANGER 1.1 KV CABLE" With 1 meter long GI angle iron grouting bracket including 1:3:6 ratio cement concrete base block of minimum size 200 x 200 x 350 mm to be provided or as approved by Elect. Supply Company.

TECHNICAL SPECIFICATIONS FOR SHEET STEEL CUBICLE TYPE SWITCH BOARDS.

1. **CONSTRUCTION:**

Switch boards shall be indoor, floor/ wall mounting, free standing, cubicle type fabricated from CRCA sheet. They shall be rated for 415/500 Volts 3 phase 4 wire 50Hz system and have insulation voltage of at least 2500Volts for 60seconds. Panels shall be fabricated using minimum 2mm thick CRCA sheet that has been pre-treated by degreasing, pickling, phosphating and passivation.

Gaskets shall be used between all adjacent units and beneath all covers to render the joints effectively dust proof. The design shall be totally enclosed, completely dust and vermin proof conforming to IP 52 class of construction. All modules shall have a covering at the bottom so that entry to dust, rats and vermin is not possible. The switchboards shall be easily extendible. The arrangement shall be logical, compact and neat. The switchboard shall have a uniform height throughout its length. A base channel of 50mm x 25mm fabricated out of 3mm thick hot rolled sheet steel painted black shall be provided to prevent corrosion of the sheet steel cubicle and facilitate cleaning of floors.

2. **FEEDER ARRANGEMENTS:**

Unless specifically stated, the switchboard shall be of single front construction, i.e. it should have all operations and connection from the front of the panel, and equipment shall be mounted on the front only. The rating of switches, fuses, contactors etc. shall be as specified. If specified rating is not available, next higher rating should be used in consultation with the Architect/ Consultant. Outgoing feeders shall be neatly arranged in different compartments. Normally equipment for individual feeders shall be accommodated in separate modules. The framework shall house the switches, switch fuse units, starters and contactors, MCBs and MCCBs etc. in multi-tier formation.

The equipment shall be mounted independent of the back plate and not on the rear surface of the housing. Each module shall be fitted with individual doors and concealed hinges. All doors shall be held securely against sponge rubber gaskets to make the equipment dust tight. All hinged doors shall be provided with insulated half-turn, flush mounted, steel knobs. The compartment doors shall be so interlocked that it shall not be possible to open the door when the switch is in closed (ON) position.

3. **BUS BARS:**

Copper bus bars are to be used for current ratings up to 400A and for ratings above 400A, electrolytic grade aluminium bus bars may be used. The rating of the three phase (and neutral) bus bars shall be as specified in the schedule of quantities and drawings and shall not be less than the total incoming switches current rating. They shall be housed in separate bus bar chambers, rated for a temperature rise of 30° C over the ambient temperature specified based on insulated conductor rating (I.S: 8084-1976). Neutral bars may be of one half the size of phase bars. An earth bus of size approximately 50% of the phase bus bar shall be provided and shall be carried to some point external to the panel.

Bus bars shall be supported on unbreakable non-hygroscopic SMC/ DMC moulded supports with antitracking barriers rigidly held to the framework of the chamber. The bus bars shall be suitably insulated with colour coded heat shrinkable PVC sleeves. Bus bar chamber shall have a separate screwed cover with clear markings to identify the voltage and current rating of the bus bars.

4. **CABLE COMPARTMENT:**

A cable compartment running along the vertical module shall be provided for easy termination of all incoming and outgoing cables entering either from top or bottom. Adequate supports shall be provided for the cables where necessary. The cable compartment shall have its own screwed removable gland plate cover, preferably at top and bottom, for easy access during cabling.

5. **CONTROL WIRING:**

All control wiring shall be carried out through the common vertical compartment. In case wires are required to cross the busbar chamber, such crossings shall be carried out in neat bunches tied together. Power connections of the feeders shall be done by aluminium or copper flats of adequate sizes. Control wiring shall be done using PVC insulated multi-stranded copper wires of minimum 1.5sq.mm nominal cross sectional area. All control wiring shall be fitted with identification ferrules at each end. Not more than two connections shall be made at any one terminal. The wires shall be arranged and supported in such a manner that there shall be no strain on the terminations. The terminations shall be of adequate current rating and size to suit individual feeder arrangements.

Power terminals shall be pressure clamp type suitable for copper/ aluminium wires. For connection above 63A, 35sq.mm cable lugs shall be used. These cable lugs shall be mounted in such a manner as to facilitate cable connections.

6. **CABLE ENTRY:**

Cubicles shall be designed to facilitate steel strip armoured, PVC sheathed copper or aluminium cable entry from top or bottom as the case may be. Removable sheet steel plates shall be fitted at the top and bottom to drill holes for cable entry at site.

7. **PAINTING:**

All steel work shall be painted in pre-approved shade as required after proper mechanical and chemical cleaning by degreasing, pickling, phosphating and passivation has been done. Painting should preferably be carried out using powder coating technique.

8. **DISTRIBUTION BOARDS:**

Distribution board shall comprise of set of 200A rating copper bus bar, earth terminals, MCB's, DP RCCB's and neutral link mounted in three tiers phase wise as detailed in the schedule of quantities. These shall be housed in a hinged double door powder coated sheet metal box of ample dimensions made by an approved manufacturer. Suitable locking arrangements shall be made if necessary. All distribution boards shall be fitted with MCB's connected on the live sides. The bus bar shall be such that the circuit could be isolated easily. The capacity of the MCB's will be as detailed in the schedule of quantities.

All the distribution boards shall be painted with approved paint. Each circuit shall have an independent neutral wire and shall be numbered and marked as required by the Architects/ Engineer-in-charge. Sample of the complete distribution board shall be approved before installing. The rate per item will include all the above mentioned material and labour required. Measurements will be in numbers of complete sets as described in the schedule of quantities.

SPECIFICATIONS FOR MEDIUM VOLTAGE EQUIPMENT

A) Air Circuit Breakers (ACB's)

Air Circuit Breakers shall be horizontal draw out type, fully interlocked and meeting the requirements of IS: 2516. Breakers shall be rated for medium voltage of 600V and rated full load current as indicated on drawings. Breakers shall be capable of breaking system short circuits specified and earth faults where required and be provided with facilities for electrical and/ or mechanical interlocking. Breakers shall be, unless specified otherwise, spring-charged, motor operated, complete with facility for manual spring charging and manual closing arrangement, isolating plug and safety shutters, mechanical ON/OFF indicator, silver plated arching and main contacts, arc chutes and trip free operation. Breakers shall be capable of being racked into "Service", "Test" and "Isolated" positions and kept locked in any position with mechanical indication of position. Unless otherwise stated ACB's shall be four pole with neutral making contact first and breaking contact last. If neutral contactors are used they must follow the same system.

B) Isolators:

Isolators units shall have quick-make, quick-break contacts with double break operating mechanism suitable for rotary operation and door interlock facility in the case of cubicle mounting. Incoming and outgoing terminals shall be properly sized to receive corresponding size of copper or aluminium conductor cable. All switches shall be rated according to the equipment schedule or drawings and shall withstand the system prospective fault current. All isolators shall be heavy duty type conforming to IS: 4047.

C) Switch Fuse Units:

Switch fuse units shall have quick-make, quick break contacts with double break operating mechanism suitable for rotary operation and door interlock facility in the case of cubicle mounting. Incoming and outgoing terminals shall be properly sized to receive corresponding size of copper or aluminium conductor cable. All switches shall be rated according to the equipment schedule or drawings and shall withstand the system prospective fault current. All Switch Fuse Units shall be heavy duty type conforming to IS:4047. Fuses shall be HRC cartridge type conforming to IS: 9224-1991 with a breaking capacity to system fault level. Fuses shall be link type with visible indication to show fuse status. Unless otherwise stated, SFUs shall be three pole and neutral.

D) Moulded Case Circuit Breakers (MCCB's):

MCCB's shall be of robust construction with quick make and quick break contacts and independent of load and supply side. They should be suitable for vertical or horizontal mounting and the incoming and outgoing terminals shall be properly sized to receive corresponding size of copper or aluminium conductor cable. They should be constructed to allow for mounting of rotary type operating handle and door interlock. There should be a separate and distinct trip position for the MCCB knob that should be transported to the rotary handle. The breaking capacity should be as specified in the Schedule of Quantities. If specified breaking capacity is not available, next higher available size is to be used.

E) On-Load Changeover Switches:

Changeover switches should be suitable for cubicle type panel mounting and shall be four pole type with delayed neutral break and advanced neutral make and separate and distinct OFF position. The switch positions must be clearly marked on the switch front and corresponding contacts must be clearly indicated at the terminals. The incoming and outgoing terminals shall be properly sized to receive corresponding size of copper or aluminium conductor cable. The switch shall have telescopic handle and door interlock. There shall be an auxiliary contact suitable for lighting up indicating light to show the position of the ON contact.

F) Instrument Transformers, Meters & Relays:

Ammeters and Voltmeters shall have moving iron spring controlled dead beat elements in square bezel flush type cases 96mm in size and suitable for switch board mounting with external provision for zero adjustment. Meters shall conform to BS:89 and have grade `A' accuracy. Scale ranges shall meet with the requirements or as indicated on the drawings or in the schedule of quantities.

Energy meters shall be two element switch board mounting type suitable for unbalanced loads. Meters should incorporate a KVA demand meter with an integration time of 30 minutes. In case of two incoming feeders, a summating C.T. shall be provided with the meter. Meters shall conform to BS:37. All tripping may be through combination of IDMT thermal and magnetic releases as specified.

G) Legend Plates and Labelling:
All switchgear feeders, bus bar chambers and cable alleys must be labelled with clear distinct Legend Plates. These can be made from metal painted black with etched lettering or using trafolyte with white lettering on black background. Feeder Legend Plates must have the current rating of the switchgear mentioned on the label. Fixing to the panel must be by rivets or by permanent form of adhesive.
Suitable "Danger" plates with respective voltage levels must be marked on all bus-bar chambers. The Legend Plates should have nominal dimensions of 75mm x 15mm. Once size is fixed, the same dimensions are to be adopted for all labelling for that particular panel. Legends must be in English and Hindi.
VII EARTHING:
Earthing shall conform to the following specifications. For other details not covered in this specification, relevant Indian standards shall be referred to.
TYPES OF EARTH ELECTRODES:
a) Pipe earth electrode.
b) Plate earth electrode.
a) PIPE EARTH ELECTRODE:
G.I pipe shall be of medium class, 40mm dia and 4.5 m in length. Galvanizing of the pipe shall conform to relevant Indian standards. G.I pipe electrodes shall be cut tapered the bottom and provided with holes of 12mm dia drilled not less than 7.5 cm from each other up to 2m of length from the bottom. The electrode shall be buried in the ground vertically with its top not less than 20 cm below ground level.
b) PLATE EARTH ELECTRODE.
For plate electrode minimum dimensions of the electrodes shall be as under:
i) GI plate electrode- 60 cm x 60 cm x 6 mm thick.
ii) Copper plate electrode- 60 cm x 60 cm x 3mm thick.
The electrode shall be buried in the ground with its faces vertical and the top not less than 3 m below ground level.
METHOD OF INSTALLING WATERING ARRANGEMENT:
In the case of plate electrode, a watering pipe of 20 mm dia of medium class G.I pipe shall be provided and attached to the electrode. A funnel with mesh shall be provided on the top of this pipe for watering the earth. In case of pipe electrode a 40mm x 20mm reducer shall be used for fixing the funnel. The watering funnel attachment shall be housed in a masonry enclosure of not less than 30cm x30cmx30 cm. A cast iron/M.S frame with cover and locking arrangement shall be suitably embedded in the masonry enclosure.
LOCATION OF EARTH ELECTRODE:

Normally an earth electrode shall not be situated less than 1.5m from any building. Care shall be taken that the excavations for earth electrode may not affect the column footings or foundations of the building. In such cases the electrodes shall be situated farther away from the building. The location of the earth electrode will be where the soil has reasonable chance of remaining moist, as far as possible. Entrances, pavements and roadways, are definitely to be avoided for locating the earth electrode.

METHOD OF EARTHING LEAD TO EARTH ELECTRODE:

In the case of plate earth electrode the earthing lead shall be securely bolted to the plate with two bolts, nuts, check nuts and washers. In the case of pipe earth electrode, it shall be connected by means of a through bolt, nuts, washers and cable socket. All materials used for connecting the earth lead with electrode shall be G.I in case of G.I pipe or G.I plate earth electrode and of tinned brass in case of copper plate electrode.

The earthing lead shall be securely connected at the other end to the main board Loop earthing shall be provided for all mountings of main board and other metal clad switches and Distribution boards with not less than 14 SWG copper or 12 SWG G.I or 4 sq. mm. Aluminium wire. The earthing lead from electrode onwards shall be suitably protected from mechanical damage by a 15 mm dia G, I pipe in case of wire and by 40mm dia medium G.I pipe in case of strip. Portions of this protection pipe within ground shall be buried at least 30 cm deep (to be increased to 50 cm in case of road crossing and pavement). The portion within the building shall be recessed in walls and floors to adequate depth.

In all cases the relevant provisions of rules 33, 61 and 67 of Indian Electricity rules1956 as amended shall be complied with. Metallic covers or supports of all medium pressure or H.T apparatus or conductors shall in all cases be connected to not less than two separate and distinct earth's including electrodes. No earth electrode shall have a greater ohm resistance than five ohms as measured by an approved earth testing apparatus. In rocky soil the resistance may be up to eight ohms.

PROTECTION OF BUILDING AGAINST LIGHTINING

Introduction:

Protection of buildings against lightning shall generally be done in accordance with I.S 2309-1969. A brief of the same is given below of guidance. Protection of special structures like trees. Livestock in fields, structures supporting overhead lines, structure with highly combustible roof etc. shall be strictly done in accordance with I.S. 2309-1969.

Principle of protection:

The principle of protection of building against lightning is to provide a conducting path between earth and the atmosphere above building through which lighting discharge may enter the earth without causing damage to the building. If adequately earthed metal parts of proper proportions are provided and spread properly on and around the building, damage can be largely can saved.

The required conditions of protection are generally met by placing all air terminals whether in the form of vertical finials or horizontal conductors, on the upper most part of the building or its projections with lightning conductor connecting the air terminals with each other and to conductors.

Zone of protection:

The zone of protection of lightning conductor denotes the space with in which a lightning conductor provides protection against a direct lightning stroke by diverting the stroke to it. For a single vertical conductor, this zone is described as a cone with its apex at the highest point of the conductor and with an angle, called as protective angle, between the side of the cone and the protector. In general, for the purpose of providing an acceptable degree of protection the protective angle of any single component part of an air termination network, namely, either one vertical or one horizontal conductor is considered to be 45 degree. Between two or to or more vertical conductors of equal height spaced at a distance not exceeding twice their height, equivalent protective angle with in the space bounded by the air terminations may be taken as 60 degree to the vertical, while the protective angle away from the conductor is still taken as 45 degree to the vertical.

Materials Dimensions:

The materials of lightning conductor, down conductor, earth termination etc. of the protective system shall be reliably resistant to corrosion or be adequately protected against corrosion. The materials recommended are: Solid or flat copper strip of 98% conductivity conforming to the relevant I .S. specification shall be used. (b) Copper clad steel: copper clad steel with copper covering permanently welded to the steel core shall be used. The proportion of copper and steel shall be such that the conductance of the material is not less than 30% of conductance of the solid copper of the same total cross sectional area. (c) Galvanometer steel: steel thoroughly protected against corrosion by a zinc coating shall be used. (d) Aluminium: Aluminium 99% pure and with sufficient mechanical strength and protected. Aluminium should not be used underground or in direct contact with walls.

All air termination shall be of G.I. and all down conductors shall be of G.I. or aluminium except where the atmospheric conditions necessitate the use of copper or copper clad steel for air termination and down conductors.

The recommended shape and minimum sizes of conductors for use above and below ground are given in table V and table VI respectively.

Design considerations:

When designing and installing lighting conductors, the following items should be taken into consideration: The entire lighting protective system should be mechanically strong to withstand the mechanical forces produced in case of a lighting stroke. The lighting protective system should be so installed that it does not spoil the architectural or aesthetic beauty of the buildings.

For the purpose of lighting protection, the vertical and horizontal conductors are considered equivalent and the use of the pointed air termination or vertical finials is, therefore, not regarded as essential. An air termination may consist of a vertical conductor, a single horizontal conductor or a system of horizontal and vertical conductors for the protection of bigger building.

A vertical air terminal where provided need not have more than one point or network on which it is fixed. Horizontal air termination should be so interconnected that no part of the roof is more than 9m away from the nearest horizontal termination along the outer perimeter of the roof is used. For a root of larger area, a network of parallel horizontal conductor shall be installed.

Horizontal air termination should be coursed along contours such as ridges, parapets and edges of flat roof. And where necessary over flat surface in such a way as to join each air termination to the rest and should themselves from a closed network. All metallic finials, chimneys, duct, vent pipes, railings, cutters, metallic flag stuff etc. on or above the main surface of roof of structure shall be bounded to, and from part of the air termination network.
It portion of a structure very considerably in height, any necessary air termination or air termination network of the lower portion should in addition to their own conductors, be bounded to the down conductor of the taller portion
All air terminal shall be effectively secured against overturning either by attachment to the object to be protected or by means of substantial brace and fixing which shall be permanently and rigidly attached to the building. The method and the nature the fixing should be simple, solid and permanent, due attention being given to climatic condition and possible corrosion
Down conductors:
The number and spacing of down conductor shall be largely depend upon the size and shape of the building and upon aesthetic consideration. The minimum of down conductor may, however, to be decided on following consideration.
a) A structure having a base area not exceeding 10 sqm. May have one down conductor only, if the height of the air termination provides sufficient protection. However, it is advisable to have at least to down conductors accept for every small building.
b) For structures having base are exceeding to 10sqm. The number of down conductor required. Should be worked out as follows:
a) One for first 100 sqm. Plus one more for every additional 300 sqm. Or part thereof or
b) One for every 30m of perimeter. The smaller of the two shall apply. Down conductor should be distributed round the outside wall of the structure. They shall preferably to be run along the comers and other projection, due consideration being given to the location of air termination and earth termination. Lift shafts shall not be used for fixing down.
Metal pipes leading rainwater from the roof to the ground may be connected to the down conductor but cannot replace them. Such connection shall have disconnecting joints. In deciding on the routing of the down conductor, its accessibility for inspection, testing and maintenance should be taken in to consideration
Joints and bonds:
The lightning protective system shall have as few joints in it as possible. Wherever joints in the down conductor above ground level are necessary they shall be mechanically and electrically effective. In the down conductor below ground level there shall be no joint. The joints may be clamped, screwed, welted, riveted, braced or welded. The bonding of the external metal forming part of the structure or drain water pipe shall have cross sectional area not less than employed for the main conductors. Gas pipe, however in no case shall be bonded to the earth termination system.
Fasteners:

Conductor shall be securely attached to the building or other object to be protected by fasteners, which shall be substantial in construction, not subject to breakage and shall be galvanized steel or other suitable material with suitable precaution to avoid corrosion. The lighting conductor shall be secured at not more than 1.20m apart for horizontal run and 1.00m for vertical run

Earth termination:

Each down conductors shall have and independent earth termination. The inter connection of all the earth termination shall be preferable. It should be capable of isolation for testing purpose by "testing joint"

Earth electrode:

"Earthling" of section 1 in "General Specification for electrical works" (part 1 internal) 2005 The whole of the lighting protective system should have a combined resistance to the earth not exceeding 10 ohms before any bonding has been affective to metal in or on a structure or to surface below ground.

TABLE - V

Shape and minimum size of conductor for use above ground (7.4.4) Stranded copper wire

S.No	Material and shape	Minimum size
1.	Round copper wire or copper clad steel wire	6mm diameter
2.	Stranded Copper wire	50sqmm. Or 7/3 dia.
3.	Copper Strip	20mm x 3mm
4.	Round galvanized iron wire	4mm diameter
5.	Galvanized iron strip	20mm x 3 mm
6.	Round aluminium wire	4mm dia
7.	Aluminium Strip	20mm x 3mm

TABLE – VI

Shape and minimum size of conductor for use below ground (7.4.4)

1. Round copper wire or copper clad steel wire	4mm diameter
2. Copper Strip	32mm x 6mm
3. Round galvanized iron wire	10mm x 6 mm
4. Galvanized iron strip	32mm x 6mm

LIGHTING PROTECTION

12.3.1 Supplying and fixing in position lighting conductor finial made of 25mm dia 300mm long GI tube having single prong at top complete with 85mm dia thick base plate including holes and fixing with necessary bolts/riveting sweating, soldering lighting conductor to GI tape and fixing on parapet wall.
12.3.2 Supplying and fixing of aviation obstruction light approved make (two lamp type) complete with 300mm long 20mmdia GI pipe 150mmdia 6mm thick base plate with necessary interconnection as required.