

**CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING
ORGANISATION**
(An autonomous body of GOI under the aegis of M/o Housing & Urban Affairs)

ON BEHALF OF

HOUSING AND URBAN DEVELOPMENT CORPORATION LIMITED
(A NAVRATNA CENTRAL PUBLIC SECTOR ENTERPRISE)

**CONSTRUCTION OF RESIDENTIAL COMPLEX OF HUDCO AT PLOT No. 28,
SECTOR - 4, VAISHALI, GHAZIABAD, UTTAR PRADESH**

TENDER

FOR

**CIVIL, PLUMBING & SANITATION, INTERNAL ELECTRICAL, FIRE
FIGHTING, MECHANICAL VENTILATION, ELEVATORS AND
EXTERNAL DEVELOPMENT WORKS**

VOLUME – III

PRICE BID

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PREAMBLE TO CONTRACT

SCHEDULE 'A'

Central Government Employees Welfare Housing Organisation propose to start construction in Plot no. 28, Sector 4, Vaishali, Ghaziabad (UP) of a total of **152** Dwelling units (DUs) in **Two Block** of Three types along with **Double Basement** including STP, UGWT and LT Panel room, Club, lifts, Gate & Guard room, Boundary wall, Road work, Landscaping/ Horticulture, Tube well, Internal and External water supply, Sewerage system, Drainage system, Rainwater harvesting, Internal & External Fire fighting, Play Courts, Swimming pool etc to make the dwelling units habitable in all respects. All works to be executed within the quoted Lump sum rate.

The work in this tender includes complete Civil work of Building blocks, Club house etc, Earth work, Designing approval & execution of D wall with required waterproofing & guniting over wire mesh, structure with Raft Foundations, Double Basement, Entrance Area Paving, Ramps and Plinth Protection, Lift wells, infrastructural civil works with Mumty, machine rooms & overhead Tanks with Pumps, Internal Drainage and Sewerage System, Plumbing, Internal Water Supply, Internal Electrification and Intercom/ Telephone/TV System, (FTTH concept can also be employed for the project) and Internal Fire fighting, sprinkler system, smoke detection & fire alarm system complete with Public Address System, CCTV, for all dwelling units and common areas, Civil works of LT panel room, underground water storage tank and Pump Room with pumps etc, STP with all mechanical equipments etc. The work also includes external roadwork, paving, footpaths, external storm water drains including rain water harvesting wells, external sewerage system, external water supply system including garden irrigation system, mechanical ventilation, Solar water heating system, external fire fighting and external boundary wall and landscaping for the area as shown on the **Layout plan** which will be on lump sum basis.

The details are given in succeeding paragraphs:

1. **FOUNDATIONS:** Raft Foundation as per Drawings for building blocks & Non Tower Area and other areas. The designing, approval from Str consultant and IIT Roorkee and construction of diaphragm wall is including in the quoted rates. Nothing extra shall be paid in this account. The connection between Diaphragm wall and raft/stitch slab/retaining wall/Column/Slab/beams by rebarring and waterproofing shall be done by the respective specialized company ONLY.
2. **BLOCK -1 (1, 2 & 3 BHK) – 76 Dwelling units** in One Block with **Double Basement + Stilt + 20 floors** having Club at Ground and First Floor, 2 Units at First Floor (2BHK) , 4 dwelling units in each floor from 2nd floor to 18th. Floor (3nos. 2BHK & 1no. 3BHK unit at each floor), 3 dwelling units in each floor at 19th & 20th Floor (1BHK) and common facilities as per following details:

At Stilt level: Car Parking, Porch, Entrance Lobby with furniture, Visitor's toilet, Two Staircases, Three Lifts Well and lifts, letter boxes, Fire Control room, Two Fire shafts, Electrical Shaft, LV shaft, Sanitary shafts, Ventilation shafts etc as per drawings.

At First Floor level: Two Dwelling Units of Type 2BHK with connecting corridors to connect dwelling units with two staircases, lift lobby and lifts, railings, terraces etc. Two Fire shafts, Electrical Shaft, Sanitary shafts etc shall be as per drawings.

At 2nd to 18th Floor level: Three Dwelling Units of Type 2BHK and One dwelling unit of Type 3BHK with connecting corridors to connect dwelling units with two staircases, lift lobby and lifts,

railing etc at each floor. Two Fire shafts, Electrical Shaft, Sanitary shafts etc shall be as per drawings at every floor.

At 19th to 20th Floor level: Three Dwelling Units of Type 1BHK with connecting corridors to connect dwelling units with two staircases, lift lobby and lifts, railing etc at each floor. Two Fire shafts, Electrical Shaft, Sanitary shafts etc shall be as per drawings at every floor. Terrace at 19th floor along with the MS framed structure, painting and cladding shall be part of the contract.

At Terrace Level: One Unit terrace shall be at 19th floor level and small terraces shall be with One BHK units at 19th floor only. Munties with staircases, Lift wells, Machine rooms at different levels as per vendor, water tanks and pumps, extension of shafts including RCC Cover Slabs, Parapet walls, architectural features, railing and other services as per drawings at Top terrace level.

Every block amongst other requirements, has the following which is included in the lump sum cost of the building: -

- (i) **Three lift wells** at all floors including basement & stilt floor and lift pits.
- (ii) **Two Staircases with Lift Lobby/ Corridor**, Entrance lobby, ducts/ shafts, connection passages, corridors and services shafts with Frame and shutters at all floors including stilt and Dwelling Units at all upper floors.
- (iii) There shall be **Mumty rooms, Lifts and Lift Machine rooms & OH Tanks** for each block on the roof Terrace as shown in drawings.
- (iv) Aviation lights, **fire fighting including sprinkler system** including fire alarm system and FHC, lightning protection system and OH RCC water storage tanks as per drawings.
- (v) Complete **Civil works** including expansion joints with provision as specified, civil works for installation of lifts with lights within the lift shaft at required intervals, lights in the machine rooms and main electric supply up to machine rooms.
- (vi) Complete **Internal services** including internal electrification, internal water supply system with water tanks and pumps above terrace, plumbing, basement drainage, storm water drainage along with connections to the main line, rainwater pipes including gully traps, catch basins, Sumps with proper pumping arrangements, sanitation, sanitary fittings and fixtures, traps, soil pipe (stacks) and connections up to main sewer line and waste pipe (stacks) and horizontal connections upto main line & signages etc.
- (vii) **Plinth Protection**, Toe walls all around the Building, Ramps connecting the stilt floor with drive ways as Shown on drawings.
- (viii) All **Internal electrical works** from and including Meter panel room/shaft (excluding SITC of Meter panel and metering system) upto and within the apartments are included in the lump sum cost of building/ blocks.
- (ix) All **Internal water supply** systems are included in the lump sum cost of the building from main supply line.
- (x) **Telephone & Television System** (FTTH concept can also be employed for the project)
- (xi) **Lift** – Supplying, installation, testing & commissioning of lifts along with all necessary fittings as per schedule D, specifications and Drawings. Two years AMC shall be included in the quoted rates.
- (xii) **Furniture-** Furniture for Entrance lobby is included in the Lump sum cost of the building.

- (xiii) All the civil works required for installation of IGL gas connection in dwelling units and external areas ie trench, manhole, sleeves for road crossings and necessary repairs in external façade, plaster etc, shall be including the quoted rates.
3. **BLOCK -2 (3BHK) – 76 Dwelling units (3BHK)** in One Block with **Double Basement + Stilt + 20 floors** having Club at Ground and First Floor, 2 Units at First Floor, 4 dwelling units in each floor from 2nd floor to 18th. Floor, 3 dwelling units in each floor at 19th & 20th Floor and common facilities as per following details:
- At Stilt level:** Car Parking, Porch, Entrance Lobby with furniture, Visitor's toilet, Two Staircases, Three Lifts Well and lifts, letter boxes, Fire Control room, Two Fire shafts, Electrical Shaft, LV shaft, Sanitary shafts, Ventilation shafts etc as per drawings.
- At First Floor level:** Two Dwelling Units with connecting corridors to connect dwelling units with two staircases, lift lobby and lifts, railing, terraces etc. Two Fire shafts, Electrical Shaft, Sanitary shafts etc shall be as per drawings.
- At 2nd to 18th Floor level:** Four Dwelling Units with connecting corridors to connect dwelling units with two staircases, lift lobby and lifts, railing etc at each floor. Two Fire shafts, Electrical Shaft, Sanitary shafts etc shall be as per drawings at every floor.
- At 19th to 20th Floor level:** Three Dwelling Units with connecting corridors to connect dwelling units with two staircases, lift lobby and lifts, railing etc at each floor. Two Fire shafts, Electrical Shaft, Sanitary shafts etc shall be as per drawings at every floor. Terrace at 19th floor along with the MS framed structure and cladding shall be part of the contract.
- At Terrace Level:** Mumties with staircases, Lift wells, Machine rooms at different levels as per vendor, water tank and pumps, extension of shafts including RCC Cover Slabs, Parapet walls, architectural features, railing and other services as per drawings at Top terrace level.
- Every block amongst other requirements, has the following which is included in the lump sum cost of the building: -
- (i) **Three lift wells** at all floors including basement & stilt floor and lift pits.
 - (ii) **Two Staircases with Lift Lobby/ Corridor**, expansion joints, Entrance lobby, ducts/ shafts, connection passages, corridors and services shafts with Frame and shutters at all floors including stilt and Dwelling Units at all upper floors.
 - (iii) There shall be **Mumty rooms, Lifts and Lift Machine rooms & OH tanks** for each block on the roof Terrace as shown in drawings.
 - (iv) Aviation lights, **Fire fighting including Sprinkler system** including fire alarm system and FHC, lightening protection system and OH RCC water storage tanks as per drawings.
 - (v) Complete **Civil works** including expansion joints with provision as specified, civil works for installation of lifts with lights within the lift shaft at required intervals, lights in the machine room and main electric supply up to machine rooms.
 - (vi) Complete **Internal services** including internal electrification, internal water supply system with water tanks and pumps above terrace, plumbing, basement drainage, storm water drainage along with connections to the main line, rainwater pipes including gully traps, catch basins, Sumps with proper pumping arrangements, sanitation, sanitary fittings and fixtures, traps, soil pipe (stacks) and connections up to main sewer line and waste pipe (stacks) and horizontal connections upto main line & signages etc.

- (vii) **Plinth Protection**, Toe walls all around the Building, Ramps connecting the stilt floor with drive ways as Shown on drawings.
 - (viii) All **Internal electrical works** from and including Meter panel room/shaft (excluding SITC of Meter panel and metering system) upto and within the apartments are included in the lump sum cost of building/ blocks.
 - (ix) All **Internal water supply** systems are included in the lump sum cost of the building from main supply line.
 - (x) **Telephone & Television System** (FTTH concept can also be employed for the project)
 - (xiv) **Lift** – Supplying, installation, testing & commissioning of MRL lifts along with all necessary fittings as per schedule D, specifications and Drawings. Two years AMC shall be included in the quoted rates.
 - (xi) **Furniture-** Furniture for Entrance lobby is included in the Lump sum cost of the building
 - (xii) All the civil works required for installation of IGL gas connection in dwelling units and external areas ie trench, manhole, sleeves for road crossings and necessary repairs in external façade, plaster etc, shall be including the quoted rates.
- 4 BASEMENT** - There is Double basement for car parking, rooms for service areas, lift shafts, lift lobbies, staircases, ventilation & pressurization cutouts, Fresh air & exhaust air fans, UGWT, STP & LT Panel room beyond/within the building envelope including D wall/retaining walls, fire fighting installations, Ventilation ducts, water supply pipes, drainage pipes, sewerage pipes, drain with cover, sump including pumps etc, ramps, waterproofing, flooring and finishing etc. complete. Civil & finishing works etc as per Schedule D, Specifications and Drawings.
- 4.1 Under Ground Water Tank and Pump Room** – Construction of RCC (M-25 or higher grade) underground water tank of size given in drawing for Treated and domestic drinking water purpose and fire tank for firefighting services etc with laying of RCC wall, roof slab, staircase, Mumty, sumps, Vent cowls, GI/DI sleeves of required size for inlet/outlet overflow, glazed tiles on inner sides of walls and floor, water proofing, poly-propylene coated foot rest, RCC slabs, SFRC man hole frame & cover, pump room, fire & domestic pumps and machines, Water treatment plant and machineries etc complete as per Schedule D, specifications and drawings. The pump room shall be internal finish with tile's dado & flooring with Kota stone etc. complete.
- 4.2 Sewerage Treatment Plant** – Construction of RCC (M-25 or more) STP of size given in drawing for Screen chamber, O/G trap, Equalization tank, MBBR tanks, Tube settler, chlorine contact tank, treated water tank, sludge holding tank, anoxic tank and plant room etc with laying of RCC wall, roof slab, Inspection platform & staircase, sumps, Vent cowls, GI/DI sleeves of required size for inlet/outlet pipes, finishing on inner sides of walls and floor, water proofing, CI monkey steps, RCC slabs, SFRC man hole frame & cover, pump room, pumps and machines etc complete as per Schedule D, specifications and drawings. The pump room shall be internal finish with plaster and waterproofing cement paint & flooring with Kota stone etc. complete.
- 4.3 Panel Room** – Construction of RCC (M-25 or more) Panel room of size given in drawing, foundation, trench and finishing on inner sides of walls and floor etc complete as per Schedule D, specifications and drawings.
- 4.4 Civil Work for Mechanical Ventilation** –Construction and finishing of all required civil works for Mechanical ventilation along with louvers and other fitting and making sleeves or openings etc complete as per shop drawings, as per Schedule D, specifications and drawings.

4.5 Civil Work for Basement- Construction and finishing of all required civil works in basement complete as per shop drawings, as per Schedule D, specifications and drawings.

- NOTES:**
1. The Civil work of UGWT, STP, Panel room & Ventilation shall be paid under the item of basement.
 2. Connections to the trunk mains of Municipal Corporation Ghaziabad outside the Project land for sewerage, storm water drains, water supply, fire fighting including obtaining statutory approvals before and after connection and before commissioning wherever required, shall be done by the Contractor.
 3. All above works including any missing item as required for the performance shall be provided as specified under various sections in Technical Specifications, Scope of work (Schedule D) and as shown on drawings.

5 Podium for Parking – This is extension of slab at Stilt roof level for car parking beyond the building envelope including Columns, slab & beams, finishing, flooring, railings, fire fighting installations, water supply pipes, drainage pipes, sewerage pipes, ramps, service shafts, false ceiling, waterproofing and landscaping works etc as per Schedule D, Specifications and Drawings. This podium shall part of the stilt floor and shall also be paid in stilt floor yardsticks.

6 CLUB – Club shall be **Ground + 1 floor** having the facilities as per following details:

Entrance lobby, Five Shops, office rooms, Waiting area, Conference room, Two staircases, Lift, passages, Hall, Kitchen, Kitchen Store, Porch/Verandah, Pool Plant Room, Guest Room with Dress & toilet, Gym, Gents and Ladies Toilets, Handicap's toilet, Janitor room, Verandahs, Electrical shafts, Fire shafts & plumbing shafts, False ceiling and wall paneling, furniture, Gym equipments as per scope of work & drawings.

At Terrace Level : Swimming Pool with raised deck/platform, Mumty with staircases, lift well, Lift overhead for MRL lift, change rooms, store room, Parapets wall, Pergola, GRC panels & other architectural features, steps, railing and other services as per drawings.

The following shall be included in the lump sum cost of the building: -

- (i) Two **Staircases**, corridors and services shafts with Frame and shutters at all floors.
- (ii) **Mumties, Lift and Lift well overhead for MRL lifts** on the roof Terrace as shown in drawings.
- (iii) **Fire fighting including sprinkler system** including FHC, lightening protection system and connection to OH RCC water storage tanks as per drawings.
- (iv) Complete **Internal services** including internal electrification, HVAC system, Audio Speaker system, internal water supply system with water tanks above block terrace, plumbing, storm water drainage along with connections to the main line, rainwater pipes including gully traps, catch basins, sanitation, sanitary fittings and fixtures, traps, soil pipe (stacks) and connections up to main sewer line and waste pipe (stacks) and horizontal connections upto main line etc.
- (v) Toe walls around the Building wherever required, plinth protection as Shown on drawings.
- (vi) All **Internal electrical works** from electrical shaft in basement to and within the club including Audio system, façade lighting are included in the lump sum cost of building.
- (vii) All **Internal water supply** systems are included in the lump sum cost of the building from main supply line to terrace and down takes.

- (viii) **Telephone & Television System** (FTTH concept can also be employed for the project)
 - (xv) **Lift** – Supplying, installation, testing & commissioning of MRL lift along with all necessary fittings as per schedule D, specifications and Drawings. Two years AMC shall be included in the quoted rates.
 - (ix) **Furniture & Other Equipments** – Supplying, installation, testing & commissioning of Furniture for club, Gym equipments as per schedule D, Specifications and Drawings.
 - (x) **HVAC System**- HVAC system are included in the lumpsum cost of the building at all levels.
 - (xi) **Swimming Pool**– Scope shall include Swimming Pool, One Balancing Tank, Pumps and Filtration Plant, Plumbing, Electrical works, Flooring of Deck area & pool accessories, pergolas, pool resting chairs, railing & planters etc complete as described in respective sections of specifications and as shown on drawings.
- 7 TENNIS CUM BASKET BALL COURT** –Scope shall include One number Tennis cum Basket Ball court with fencing as described in respective section of particular specifications and as shown on drawings.
- 8 BOUNDARY WALL** – Boundary wall is already constructed around the residential complex with RCC Column, Plinth beams, Block/Brick work and railing etc. The finishing work shall be as per Schedule D, Specifications and Drawings.
- 9 ROAD** – Providing and laying V.D. cement concrete in roads over PCC and WBM, factory made Kerbs, Pavements, Footpath and earth filling, Factory made Modified Thermoplastics (Polymer Rubberized) heavy duty speed breakers and dividers, Tiles paving, kerb painting and road markings etc as per Schedule D, Specifications and Drawings.
- 10 External Fire Fighting System**– Supply, Laying, Jointing, testing and commissioning of External fire fighting System complete including fire pumps, hydrants, NOC from fire department etc all complete as per Schedule D, Specifications and Drawings.
- 11 External Water Supply System**– Supply, laying, jointing, testing and commissioning of pipes. Testing and commissioning of three phase pumping sets, dewatering pump, Brick masonry chamber, SFRC chamber cover and frame fixing, Garden Hydrant ring mains and inner connections, Connections from Tube well to UGT, connection from authority main line to UGT etc complete as per Schedule D, Specifications and Drawings.
- 12 External Drainage System** – Excavation and laying of uPVC schedule- 80 Pipe, jointing and fixing, PCC alround, Catch basins/pits, frame and grating, connection to authority drain etc. complete as per Schedule D, Specifications and Drawings.
- 13 External Sewage System** – Construction of external sewage system, Eco pipe, Moorum filling around the pipes, Manholes, STP Bye-pass line and connection to trunk sewer line etc as per Schedule D, Specifications and Drawings.
- 14 Tube well** – Installation of Tube wells as per Schedule D, Specifications and Drawings.
- 15 Landscaping / Horticulture** – Excavation, dressing and grassing with grass including watering and maintenance of the lawn, preparation of beds for hedges, shuddery, Precast kerb stone, planting of trees, landscape lighting, Signages and Hoardings, Speed breakers, Road markings, SS Dustbins, planters, water bodies including feature wall, sculptures, pergolas/Gazebo,

pavers, Cobbles, Medallion in stone flooring, sprinklers and irrigation system and Kids play area equipment, Audio speaker system connected/operated from Club etc. complete as per Schedule D, Specifications and Drawings.

- 16 Rain water Harvesting** – Construction of recharge well as per Schedule D, Specifications and Drawings.
- 17 Guard Rooms and Main Gates** – Guard room complete with ramps/ steps, plinth protection, toilets, working counter slabs, wooden/uPVC door windows, sanitary pipes and fixtures etc. entrance having check post, gates, walls, RCC columns, ramps/ pavements, Flood lights and other light fittings, HPL/Stone/ACP cladding including planters & signages as per Schedule D, Specifications and Drawings.
- 18 UGWT & STP-** All the pumps & accessories, plumbing, Electrical, Mechanical & Ventilation works as per Schedule D, specifications and drawings.
- 19 Digital addressable lighting interference (DALI) system-** Supply and Installation of Digital Addressable Lighting Interference (DALI) Based motion and light Sensor for Basement, Stilt, , common areas and Staircases in Towers.
- 20 Miscellaneous Works** – Light fixtures in Balconies & common areas.
- 21 Modular Kitchen-** The modular Kitchen shall be provided in each flat finished with all fittings and fixtures complete as shown in drawings.
- 22 Solar Water Heating System** – Supplying, installation, testing & commissioning of solar water heating system along with all pipes insulation and fittings as per Specifications and Drawings for kitchen only of each flat.

SPECIAL NOTES:

In the event of conflict between Scope of work and drawings or other documents including the Specifications, the most stringent specification shall apply. The interpretation of the Architect/CGEWHO shall be final and binding on the contractor.

In case of discrepancy between schedules of items, the specifications and or drawings the following order of preference would be observed:

- i) Description of Schedule of items/Scope of work
- ii) Particular specifications and special conditions
- iii) Tender Drawings
- iv) Specifications Vol II and CPWD Specifications
- v) Indian Standard Specifications of B.I.S.

The contractor shall obtain from the local authority, all sanctions and completion certificates with respect to his scope of works as required for occupation/completion of the buildings/project.

The contractor shall prepare the Aluminium shuttering for both the blocks separately to construct both the blocks simultaneously.

The Contractor shall procure and bring Materials/Equipment to the site only on the basis of drawings approved for construction and shop drawings and not on the basis of Scope of work which are approximate only.

During detailed layout there may be minor changes in positioning of building blocks or Service lines/External Services for which no financial adjustment shall be admissible.

The contractor has to submit shop drawings for Internal Electrical, PHE, GAD for lifts, door windows, Fire fighting, External services, Solar water heating system, Mechanical ventilation and all other miscellaneous vender based items for approval to Architect/CGEWHO before commencement of corresponding items.

On award of the work the contractor shall be issued two (2) sets of consultant's drawings. These drawings shall be the base of contractor's shop drawings. Shop drawings shall be detailed working drawings coordinated with other trading work, which incorporate the contractor's details for execution of the work and incorporate equipment manufacturer's details and dimensions to ensure that the same can be installed in the space provided. All shop drawings should detail pipe routing and levels, showing location of other services at crossings etc., cable runs, route cable trays and all allied works and must be fully coordinated with other services, before execution of the works. All shop drawings will be made on Autocad and coloured prints are to be produced for approval and site work.

All rates quoted are inclusive of cutting holes, sleeves and chases in walls and floors with core cutting machines and electrical chasing machines and making good the same with cement mortar / concrete / water proofing of appropriate mix and strength as directed by the Engineer in charge. Contractor shall provide holes, sleeves, recesses in the concrete and masonry work as the work proceeds. All hot and cold water supply pipes crossing masonry walls of typical room toilets shall be provided with GI pipe sleeves. The annular space between the pipe and sleeve shall be filled up with glass wool/ PU puff in between and fire proof sealant on either end after testing. Any pipe crossing fire rated wall as per fire compartmentation will be provided with higher size of GI sleeve. All floor crossing pipes will be provided with higher size GI sleeve.

On completion of all works, contractor shall demolish all stores, remove all surplus materials and leave the site in a broom clean condition, failing which the same shall be done by the Project Manager at the Contractor's risk and cost. The contractor shall, from time to time, clear away all debris and excess materials accumulated at the site failing which the same shall be done by CGEWHO/Project Manager at contractor's risk and cost and cost of cleanup shall be deducted from the contractor's bill.

After the fixtures, equipment and appliances have been installed and commissioned; contractor shall cleanup the same and removes all plaster, paints, stains, stickers and other foreign matter or discoloration leaving the same in a ready to use condition.

YARD STICK FOR RUNNING PAYMENT:

For release of payments in "Running Bills" against item of Schedule – A, the percentage as indicated against each stage in Schedule – C (Part C-1 to C-20) shall remain firm throughout the contract, irrespective of actual expenditure incurred by Contractor against items of these stages. Any variation shall be deemed to be accounted for in arranging the funds and financial effect of the same shall be deemed to be included in the lump sum rate quoted.

Tenderer's lump sum prices quoted against Schedule – A to E shall be deemed to include full and entire completion of all works as described here-in before and in accordance with good engineering practice and recognized principles including obtaining approvals and occupancy/Completion Certificates from all the concerned authorities.

The tender specifications, drawings, CPWD specifications and IS provisions are to complement each other and tender specific specification will have precedence over CPWD specification in case of ambiguity. In case of any details missing or incomplete, these documents shall supplement the drawback.

Details of construction/items which may not have been inadvertently specified or shown on drawings but are apparently and obviously required for making the building, trades and services functional or safe or essential for completion of the work shall be deemed to be included in the lump sum rates quoted by the Contractor.

The details of such work shall have appropriate quality and as per specifications of this contract. In case there is any discrepancy of any item or the same item conveys different meaning at different places viz tender drawings/ specifications/ scope of work/ yard sticks, the contractor/ tenderer shall clarify the same in pre-bid meeting or else later the decision of the CEO, CGEWHO, in such matters shall be final and binding.

Any clarification regarding commercial terms & conditions should be sought by the tenderer in the pre-bid meeting. No claim for any item or quantity or any other discrepancy or mistake shall be entertained later or during tendering or completion of work on any grounds.

Since the contract is on lump sum value, any extra claim due to variations in areas/ quantities with respect to drawings/ documents or the sum product of total area will not be admissible.

The work to be executed within the finalized lump sum contract price shall include ALL items indicated in ANY of the contract documents like:

1. Tender drawings
2. Specifications
3. Preamble to contract (Schedule A & B)
4. Payment yard sticks (Schedule C)
5. Scope of work (Schedule D)
6. Approved make of materials (Schedule E)
7. Conditions of contract
8. Article of agreement
9. All constituents of the tender document

Provisioning and arrangement of all adequate and required tools, plants, construction machinery such as Tower crane, Diaphragm Hydraulic Grab machine, Aluminium shuttering, steel scaffolding, concrete batching plants including mixers, concrete pumping equipment, building hoist, de-watering equipments, vibrators, compressors, welding set, survey instruments, concrete testing laboratory equipment, weight, scales, hosting equipment and all other miscellaneous machinery/ equipment including two numbers personnel lifts (for exercising supervision) required for efficient, accurate and proper execution of work for completion in time is deemed to be included in the lump sum rates for Schedule – A to E quoted by the Contractor.

The CGEWHO and Architect reserve the right to ensure their installation and use where they deem it necessary.

COMPLETION PERIOD:

All works under this contract shall commence simultaneously and the period of completion for the entire work shall be **36 months (Thirty Six months)** from the date of commencement.

SCHEDULE 'B'

ALL RATES IN THIS CONTRACT SHALL BE FOR WORK INCLUSIVE OF ALL TYPES OF SHORING, SCAFOLDINGS, LEADS, SLOPES, DISPOSAL AND FOR ALL HEIGHTS, LEVELS AND LIFTS UNLESS OTHERWISE SPECIFIED

1. The basic rate of any material mentioned in the contract are exclusive of contractor's profit, over heads and carriage but inclusive of all taxes, octroi, royalty, labour cess & GST etc.
2. All weights and measures (of any material) shall be recorded net to finished size only, and exclude wastage which shall be to the contract's account and provided for within the quoted rate.
3. The following shall not be measured and/or paid for and the contractor shall make allowance for the same in the quoted rate-
 - a) Setting out of the work and site clearance
 - b) Excavation for insertion of planking and shuttering
 - c) Removal of slips or falls in excavation due to any reason whatsoever
 - d) Forming steps in the sides of excavation and their removal
 - e) Keeping water tank filled up with water till handing over, casting water tight tanks and testing for tightness including cost of emptying and refilling tanks whenever required
 - f) Dewatering, bailing or pumping out water in excavation caused from rains, springs, underground water source, underground pipelines, drains etc and keeping it dry during construction of the building up to laying of ground floor roof is completed or as directed by Structural Consultant.
 - g) Preparing and submitting shop/fabrication drawings for Aluminium shuttering, doors, windows and all other fabricated items of work for prior approval before commencing the work
 - h) Any other similar kind of preparatory work
 - i) Obtaining CTE, permission and royalties to be paid to the department for excavation work shall be included in the contract price.
4. Sand used shall be coarse sand unless where specified as jamuna/ fine sand and aggregate shall be hard crushed blue quartzite stone in accordance with the requirement of IS:383.
5. Nothing extra shall be paid for the following, which shall be provided for within the quoted rates for finishing item of work-
 - a) Making/ finishing all expansion joints including curing

- b) Making "V" / "U" grooves of any pattern at junctions of walls, ceilings, skirting and frames as directed by the CGEWHO/Architect
 - c) In case of wall plaster, dado and skirting, raking out joints, cleaning the surface, application of cement slurry on RCC surface
 - d) Work in patches, narrow widths, small quantities, curved surfaces, projected bands, setbacks offsets architraves, inclined surfaces, coffer beams and slabs, fins and facias etc
 - e) Work at all leads, lifts, levels and heights
 - f) Making all drip courses, in plastered surfaces, throating of plaster etc or in RCC during casting in aluminum shuttering. Making of all sleeves, cutouts & openings etc in aluminium shuttering.
 - g) Finishing the edges of electric fittings and boxes etc
 - h) Use of all scaffoldings and cradles, dust sheets and other covering for the protection of fixtures, fittings, furniture, floors etc
 - i) Cleaning of stains, material residue from glass, joinery, electric fittings, floors, wall surfaces etc including washing the floors and leaving the premises neat and clean
 - j) Grooves in plaster up to 12mmx12mm size or as per the drawings at the junction of two different finishes of walls, masonry and RCC etc including providing cement slurry between brickwork and concrete
 - k) All samples and mockups required for approvals
 - l) Making openings in marble/granite/kota stone slabs of floors, dados and platforms for sanitary fittings, holes, gratings, floor traps and such like services connections and electrical fittings and boxes
6. The quoted rate for External Plaster/ Stone Cladding/grinding on walls and bands shall be deemed to include:
- a) Work at all levels and heights and as per shape/size of panels
 - b) Providing External Plaster/ Stone Cladding/grinding on walls in bands, copings, raised levels, cornices, projections etc
 - c) Laying in line, level and plumb
 - d) Providing and fixing chicken wire mesh at the junction of concrete and masonry works
 - e) Provide double stage MS tabular pipe scaffolding erected independent of the walls and column surfaces to be plastered
 - f) Providing pigment / color to the desire shade, and providing external plaster in a combination of different colors and shades as per drawings
7. To execute all works as required to complete a habitable complex whether specified or not

8. To execute work as per the conditions laid down in the EIA clearance and all cost to execute such conditions related to construction work as per EIA clearance shall be deemed to be included in the contract price.
9. All items of work under this Contract shall be executed strictly to fulfill the requirements laid down in the specifications and drawings and also to fulfill basis of designs as per relevant IS codes. Type of equipment, material specification, methods of installation and testing and type of control shall be in accordance with the specifications, approved shop drawings and the relevant Indian Standards, however capacity of each component and their quantities shall be such as to fulfill the basic requirement.
10. The contractor shall include for making all the opening in slabs, beams, walls etc. as required for his work in aluminum shuttering. However, the contractor can coordinate with civil work to provide necessary sleeves. All openings shall be closed using water proofing compound or as specified by Project Manager/Architect/PMC.

11. Special conditions for cement

The contractor shall procure **Ordinary Portland Cement (OPC) only** (conforming to IS: 8112) for all works, from reputed manufacturers of cement having a production capacity not less than one million tonnes or more per annum, such as UltraTech, Vikram, Shree Cement, Birla, Cement Corporation of India Limited, Jaypee Cement, JK Cement, Rockstrong, Lafarge etc., as approved by the Ministry of Industry, Government of India, and holding license to use ISI certification mark for their product. The tenderers may also submit a list of names of cement manufacturers which they propose to use in the work. CGEWHO reserves the right to accept or reject name(s) of cement manufacturer(s) which the tenderer proposes to use in the work. No change in the tendered rates will be accepted if the tender accepting authority does not accept the list of cement manufacturers, given by the tenderer, fully or partially. The supply of cement shall be taken in 50 kg bags bearing manufacturer's name and ISI marking. Samples of cement arranged by the contractor shall be taken by the CGEWHO/PMC and got tested in accordance with provisions of relevant BIS codes. In case the test results indicate that the cement arranged by the contractor does not conform to the relevant BIS codes, the same shall stand rejected, and it shall be removed from the site by the contractor at his own cost within a week's time of written order from the CGEWHO/PMC to do so.

- (a) The cement shall be brought at site in bulk supply of approximately 50 tonnes or as decided by the CGEWHO/PMC. The cement godown of the capacity to store a minimum of 2000 bags of cement shall be constructed by the contractor at site of work for which no extra payment shall be made.
- (b) Double lock provision shall be made to the door of the cement godown. The keys of one lock shall remain with the CGEWHO/PMC or his authorized representative and the keys of the other lock shall remain with the contractor. The contractor shall be responsible for the watch and ward and safety of the cement godown. The contractor shall facilitate the inspection of the cement godown by the CGEWHO/ PMC at any time.
- (c) The cement shall be got tested by the CGEWHO/PMC and shall be used on the work only after satisfactory test results have been received. The contractor shall get the cement tested from approved Laboratories/Test House at his own cost.
- (d) The actual issue and consumption of cement on work shall be regulated and proper accounts to be maintained as per CPWD manual. The theoretical consumption of cement shall be worked out as per CPWD manual and shall be governed by conditions laid therein.

In case the cement consumption is less than theoretical consumption including permissible variation, recovery at the rate Rs. 8000 per MT shall be made. In case of excess consumption, no adjustments shall be made.

- (e) The cement brought to the site and the cement remaining unused after completion of the work shall not be removed from site without the written permission of the CGEWHO/ PMC.
- (f) The damaged cement shall be removed from the site immediately by the contractor on receipt of a notice in written from the CGEWHO/ PMC. If he does not do so within 3 days of receipt of such notice, the CGEWHO/ PMC shall get it removed at the cost of the contractor. CGEWHO/PMC may change the brand of Cement depending upon availability in local market, if needed. Instructions in this respect can be issued by them at regular intervals. The name of manufacturers should be finalized after taking into consideration the suggestions of contractors during pre bid meeting, if any.

12. Special conditions for steel

- (a) The contractor shall procure Corrosion Resistant Steel (CRS) TMT bars Fe500 D grade from primary producers such as TISCO, SAIL, RINL, JINDAL OR as approved by Ministry of Steel. Any upper grade is acceptable without any extra cost/financial implication.
- (b) The grade of the steel Fe500 D grade to be procured as per BIS 1786-2008.
- (c) The CRS TMT bars procured from primary producers shall conform to manufacture's specifications.
- (d) CRS TMT bars procured from primary producers, the specifications shall meet the provisions of IS 1786:2008 pertaining Fe 500 D grade of steel as specified in the tender.
- (e) The contractor shall have to obtain and furnish test certificates to the CGEWHO/ PMC in respect of all supplies of steel brought by him to the site of work.
- (f) Samples shall also be taken and got tested by the CGEWHO/ PMC as per the provisions in this regard in relevant BIS codes. In case the test results indicate that the steel arranged by the contractor does not conform to the specifications as defined in CPWD manual, the same shall stand rejected, and it shall be removed from the site of work by the contractor at his cost within a week time or written orders from the CGEWHO/ PMC to do so.
- (g) The steel reinforcement bars shall be brought to the site in bulk supply of 10 tonnes or more, or as decided by the CGEWHO/ PMC.
- (h) The steel reinforcement bars shall be stored by the contractor at site of work in such a way as to prevent their distortion and corrosion, and nothing extra shall be paid on this account. Bars of different sizes and lengths shall be stored separately to facilitate easy counting and checking.
- (i) For checking nominal mass, tensile strength, bend test, re-bend test etc. specimens of sufficient length shall be cut from each size of the bar at random, and at frequency not less than that specified below:

Size of bar	For consignment below 100 tonnes	For consignment above 100 tonnes
Under 10 mm dia bars	One sample for each 25 tonnes or part there of	One sample of each 40 tonnes or part there of
10 mm to 16 mm dia bars	One sample for each 35 tonnes or part there of	One sample for each 45 tonnes or part there of
Over 16 mm dia bars	One sample for each 45 tonnes or part there of	One sample for each 50 tonnes or par there of

- (j) The contractor shall supply free of charge the steel required for testing including its transportation to testing laboratories. The cost of tests shall be borne by the contractor.
- (k) The actual issue and consumption of steel on work shall be regulated and proper accounts to be maintained as per CPWD manual. The theoretical consumption of steel shall be worked out as per procedure prescribed in CPWD manual and shall be governed by the conditions laid therein. In case the consumption is less than theoretical consumption including permissible variations recovery at the rate Rs. 80000/- per MT shall be made. In case of excess consumption, no adjustment will be made.
- (l) The steel brought to site and the steel remaining unused shall not be removed from site without the written permission of the CGEWHO/ PMC.

Removal of rejected/sub-standard materials

The following procedure shall be followed for the removal of rejected/sub-standard materials from the site of work:

- (i) Whenever any material brought by the contractor to the site of work is rejected, entry thereof will be made in the Site Order Book under the signature of the CGEWHO/ PMC giving the approximate quantity of such materials.
- (ii) As soon as the material is removed, a certificate to that effect shall be recorded by the CGEWHO/ PMC against the original entry, giving the date of removal and mode of removal, i.e., whether by truck, carts, or by manual labor. If the removal is by truck, the registration number of the truck should be recorded.
- (iii) When it is not possible for the CGEWHO/ PMC to be present at the site of work at the time of actual removal of the rejected/sub-standard materials from the site, the required certificate should be recorded by the Project Engineer, and the CGEWHO/ PMC should countersign the certificate recorded by the Project Engineer.

Material testing

Sample of materials will be tested by the Third Party Lab approved by NABL with the prior approval of CGEWHO/CGEWHO. The payment for the same shall be made by CGEWHO directly to the Lab and shall be recovered form the Contractor's RA bill.

Periodical checking of cement

Instructions as given in CPWD manual will be followed regarding checking of Ready Mixed Concrete (RMC) that may be stipulated for use in a work. The minimum cement content in RMC shall be as per relevant IS code. Use of Flyash shall be allowed in RMC with OPC cement, in qty as stated in IS code. Flyash shall be mixed in the RMC plant only.

<u>CENRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION</u>					
<u>SCHEDULE 'C'</u>					
<u>SUMMARY OF COST</u>					
Sr. No.	Description of Sub head	Qty	Unit	Rate (Rs.)	TOTAL AMOUNT
1	Lump Sum Price worked out by contractor for Complete Double Basement including civil part of UGWT, STP and LT Panel Room etc with complete foundation as per attached Tender, Drawings and Specifications for Civil works, Plumbing Works, Electrical works, Fire Fighting works and Fire Alarm etc complete.	1	Each		
2	Lump Sum Price worked out by contractor for Block-1 above structural slab top level of Basement roof as per attached Tender, Drawings and Specifications for Civil works, Plumbing Works, Electrical works, Lifts, Fire Fighting works, Fire Alarm system & Furniture etc complete.	1	Each		
3	Lump Sum Price worked out by contractor for Block-2 above structural slab top level of Basement roof as per attached Tender, Drawings and Specifications for Civil works, Plumbing Works, Electrical works, Lifts, Fire Fighting works, Fire Alarm system & Furniture etc complete.	1	Each		
4	Lump Sum Price worked out by contractor for Club as per attached Tender, Drawings and Specifications for Civil works, Plumbing Works, Electrical works, Fire Fighting works & Fire alarm System, Audio Speaker system, façade lighting, HVAC, furniture, gym equipments and Swimming Pool etc complete.	1	Each		

Contractor

Garg and Associates


GARG & ASSOCIATES
 48, REGAL BUILDING
 CONNAUGHT PLACE
 NEW DELHI-110028
 CA-NO.-98/28499



CGEWHO

Sr. No.	Description of Sub head	Qty	Unit	Rate (Rs.)	TOTAL AMOUNT
5	Lump Sum price worked out by contractor for Guard room & Main gate as per attached Tender, Drawings and Specifications	2	Each		
6	Lump Sum Price worked out by contractor for Tennis cum Basket Ball Court as per attached Tender, Drawings and Specifications for Civil works, Plumbing Works, Electrical works etc complete.	1	Each		
7	Lump Sum price worked out by contractor for Finishing of Boundary Wall as per attached Tender, Drawings and Specifications	1	Each		
8	Lump Sum price worked out by contractor for Road Work as per attached Tender, Drawings and Specifications	1	Each		
9	Lump Sum price worked out by contractor for External Fire Fighting Works as per attached Tender, Drawings and Specifications	1	Each		
10	Lump Sum price worked out by contractor for External Water Supply Works as per attached Tender, Drawings and Specifications	1	Each		
11	Lump Sum price worked out by contractor for External Drainage Works as per attached Tender, Drawings and Specifications	1	Each		
12	Lump Sum price worked out by contractor for External Sewer System as per attached Tender, Drawings and Specifications	1	Each		

Contractor

Garg and Associates


GARG & ASSOCIATES
 48, REGAL BUILDING
 CONNAUGHT PLACE
 NEW DELHI-110054
 GARG, GARG & ASSOCIATES
 CA-NO.-98/25499



CGEWHO

Sr. No.	Description of Sub head	Qty	Unit	Rate (Rs.)	TOTAL AMOUNT
13	Lump Sum price worked out by contractor for Tube well as per attached Tender, Drawings and Specifications	1	Each		
14	Lump Sum price worked out by contractor for Landscaping & Horticulture Works as per attached Tender, Drawings and Specifications	1	Each		
15	Lump Sum price worked out by contractor for Rain Water Harvesting as per attached Tender, Drawings and Specifications	2	Each		
16	Lump Sum price worked out by contractor for Plumbing, Electrical, pumps and Mechanical Equipments of STP as per attached Tender, Drawings and Specifications	1	Each		
17	Lump Sum price worked out by contractor for Plumbing, Electrical pumps and Mechanical Equipments of UGWT & WTP as per attached Tender, Drawings and Specifications	1	Each		
18	Lump Sum price worked out by contractor for Mechanical Ventilation Works in Both Basements as per attached Tender, Drawings and Specifications	1	Each		
19	Lump Sum price worked out by contractor for Digital Addressable Lighting Interference (DALI) System as per attached Tender, Drawings and Specifications	1	Each		

Contractor

Garg and Associates


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 GARG & ASSOCIATES
 CA-NO.-98/25499



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Sr. No.	Description of Sub head	Qty	Unit	Rate (Rs.)	TOTAL AMOUNT
20	Price worked out by contractor for Modular Kitchens as per attached Tender and Specifications	1060	Sqm		
21	Price worked out by contractor for Solar Water Heating System as per attached Tender and Specifications	4000	Ltr		
	Summary				
	TOTAL COST (IN FIGURES) (S. No. 1 to 21)				
	TOTAL COST (IN WORDS)				
	Discount/Addition if any (In Figures)				
	Discount/Addition if any (In Words)				
	NET TOTAL COST (IN FIGURES)				
	NET TOTAL COST (IN WORDS)				

Contractor

Garg and Associates


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 NEW DELHI-110021
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CGEWHO

SCHEDULE OF PAYMENT C -1				
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT AGAINST THE CONSTRUCTION OF COMPLETE BASEMENT				
BASEMENT INCLUDING ALL SERVICES AREAS				
Sr. No.	Stage of Work	% payment for Blk-1	% payment for Blk-2	Cumulative
1	On completion of D wall including RCC and steel reinforcement complete (The complete basement area shall be paid in this stage)	20.00%		20.00%
2	On completion of Dewatering till casting of Basement Roof till GF level	1.25%		21.25%
3	On completion of excavation	2.00%		23.25%
4	On completion of ATT,PCC, water proofing treatment, casting of Foundation ie Raft, footings, Stitch slab, retainers, ramps, drain, sump etc for building blocks including R/F steel & form work.	10.00%	10.00%	43.25%
5	On completion of ATT,PCC,water proofing treatment, casting of Foundation ie Raft, footings, Stitch slab, retainers, ramps, drain, sump etc, for Non Tower area including R/F steel & form work.	7.00%	7.00%	57.25%
6	On completion of water proofing treatment, casting of walls upto Basement roof level including R/F steel & form work.	2.50%	2.50%	62.25%
7	On casting of Column up to beam bottom, in building blocks/towers area.	1.25%	1.25%	64.75%
8	On casting of Column up to beam bottom, in Non Tower area.	0.65%	0.65%	66.05%
9	On casting of roof slab of building blocks/towers.	3.00%	3.00%	72.05%
10	On casting of roof slab of Non Tower area and ramp covers	3.75%	3.75%	79.55%
11	On completion of brick/block work including R/F	0.25%	0.25%	80.05%
12	On completion of door, windows including hardware.	0.25%	0.25%	80.55%
13	On completion of Steel work in door frame and shutters, rolling shutters, railings, drain cover, ramp cover etc	0.30%	0.30%	81.15%
14	Internal Plaster and finishing including Painting etc	1.00%	1.00%	83.15%
15	On completion of Flooring, skirting & dado	1.00%	1.00%	85.15%
16	Electrification ie conduiting, Wiring, Switches & fixtures	0.30%	0.30%	85.75%
17	On Completion of fire fighting services	0.75%	0.75%	87.25%
18	On completion of expansion joints treatments	0.00%	0.05%	87.30%
19	On completion of water proofing and drainage works over basement slab for landscaping/ under hardscape	1.500%	2.20%	91.00%
20	Completion of drainage, Sanitary, Plumbing & all other related services.	0.60%	0.60%	92.20%
21	Completion of Civil Works if any related to Mechanical ventilation equipments, ducting & all other related services.	0.05%	0.05%	92.30%
22	Completion of UG Tank and pump room including Civil works, waterproofing, inner side tile dado & flooring etc. complete	0.50%	0.00%	92.80%
23	Completion of STP and pump room including civil works, waterproofing, inner side tile dado & flooring etc. complete	0.00%	0.50%	93.30%
24	Completion of LT Panel room including mechanical, plumbing, electrical, rolling shutters & finishing etc. complete	0.00%	0.20%	93.50%
25	All balance remaining works	3.00%		96.50%
26	On submission of NOCs/completion certificate	2.00%		98.50%
27	Site Clearance and Handing over	1.50%		100.00%
	Total			100.00%

SCHEDULE OF PAYMENT- C2

PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT ABOVE BASEMENT ROOF STRUCTURAL SLAB TOP LEVEL FOR RESIDENTIAL TOWER S+20 (SEPARATELY FOR EACH BLOCK)

Srl.	Stage of Work	%payment	No. of Floor	Total for all floors	Cumulative
1	RCC works including columns, beams, slabs, staircases, shafts etc. complete with Aluminium shuttering and reinforcement for all floors ABOVE BASEMENT ROOF STRUCTURAL SLAB TOP LEVEL.				
	a) Column & Shearwall casting with Aluminium Shuttering	0.40			
	b) Roof slab Shuttering with Aluminium Shuttering including R/f, bands, chajjas, lofts, counter slabs, shelves, RCC lintels etc.	0.30			
	c) Roof slab Reinforcement	0.45			
	d) Roof slab Casting complete	0.45	1.60	21.00	33.60
2	Completion of brick works	0.05	20.00	1.00	34.60
3	Door frames	0.07	20.00	1.40	36.00
4	Door shutters with fitting & hardware and polishing complete	0.14	20.00	2.80	38.80
5	uPVC windows & door windows combined including glazing & wire gauge shutters complete	0.22	20.00	4.40	43.20
6	Railings in staircases, balconies, terraces etc. including powder coating	0.07	20.00	1.40	44.60
7	Electrical conduits including boxes and wiring	0.14	20.00	2.80	47.40
8	On Completion of fire fighting services	0.18	20.00	3.60	51.00
9	On completion of expansion joints treatments	0.01	20.00	0.20	51.20
10	Dado & counter tops in kitchen & toilet including polishing etc.	0.15	20.00	3.00	54.20
11	Flooring, skirting & Cladding works including grouting & polishing	0.30	20.00	6.00	60.20
12	All works in stilt floor including podium top level including block work, plaster, finishing, door window & other items etc	1.50	1.00	1.50	61.70
13	All works in Mumty room, parapets, machine room/lift Overhead, OH tanks including internal & external finishing complete	0.30	1.00	0.30	62.00
14	Roof terracing, water proofing at all terraces and copings including rain water pipes and solar water heating system with pipes	0.40	1.00	0.40	62.40
15	All plumbing works including RWP, pipes, fittings, testing and plastering in toilets and other plumbing areas	0.28	20.00	5.60	68.00
16	CP fittings and testing	0.25	20.00	5.00	73.00
17	All sanitary fixtures/wares and testing	0.25	20.00	5.00	78.00
18	Electrical fittings in Balconies & common areas	0.07	20.00	1.40	79.40
19	Aviation Light & Lightning Arrestor complete	0.20	1.00	0.20	79.60
20	Internal fire detection, suppression and sprinklers complete	1.00	1.00	1.00	80.60
21	Internal painting including primer, putty & POP cornice finishing complete	0.32	20.00	6.40	87.00
22	External finishing works including grinding of wall surfaces, forming grooves, shaft plaster, trenches, External painting and painting of pipes etc.	4.50	1.00	4.50	91.50
23	Supply Lift Machinery (PER LIFT)	0.75	3.00	2.25	93.75
24	Installation, Testing & Commissioning of Lifts (PER LIFT) including NOC from Competent Authority	0.75	3.00	2.25	96.00
25	All balance work, furniture and miscellaneous items	1.00	1.00	1.00	97.00
26	Comprehensive testing and commissioning of all works and NOC/Completion certificate of all works	1.50	1.00	1.50	98.50
27	Site Clearance	0.50	1.00	0.50	99.00
28	Handing over of Building, common areas, common facilities and amenities	1.00	1.00	1.00	100.00
	TOTAL				100.00

SCHEDULE OF PAYMENT C-3

PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT

CLUB HOUSE

Srl.	Stage of Work	%payment		No. of Floor	Total for all floors	Cumulative
1	RCC works including columns, beams, slabs, staircases, shafts etc. complete with shuttering and reinforcement in Ground & upper floors					
	a) Columns	3.25				
	b) Shuttering of Slab/beams	0.75				
	c) Reinforcement	2.50				
	d) Casting complete	3.50	10.00	2	20.00	20.00
2	Completion of brick/block works including lintels, chajjas, lofts, counter slabs, shelves, RCC lintels etc. in Ground and Upper floors		3.00	2	6.00	26.00
3	Door frames		0.75	2	1.50	27.50
4	Door shutter with fitting & hardware, primer and painting with synthetic enamel paint		1.00	2	2.00	29.50
5	uPVC windows including glazing & wire gauge shutters complete		1.15	2	2.30	31.80
6	Railings in staircases, balconies etc. including primer and painting		0.20	2	0.40	32.20
7	Electrical conduits including boxes and wiring		0.75	2	1.50	33.70
8	Electrical switches & sockets, distribution boards, MCBs, meter board, tag blocks, earthing, testing etc.		0.75	2	1.50	35.20
9	Internal plaster (excluding toilets), water proofing works (in sunken areas of toilets, kitchens etc.) including punning		0.90	2	1.80	37.00
10	Dado & counter tops in kitchen & toilet including polishing etc.		0.90	2	1.80	38.80
11	Flooring & skirting works including grouting & polishing.		4.50	2	9.00	47.80
12	All works in Mumty room, parapets, machine room/lift Overhead including internal & external finishing complete		1.00	1	1.00	48.80
13	Roof terracing, water proofing and copings including rain water pipes and solar water heating system with pipes & gazebo/pergola etc		0.50	1	0.50	49.30
14	All plumbing works including pipes, fittings, testing and plastering in toilets and other plumbing areas		0.90	2	1.80	51.10
15	CP fittings and testing		0.90	2	1.80	52.90
16	All sanitary fixtures/wares and testing		0.90	2	1.80	54.70
17	Electrical fittings i/c façade lighting		0.90	2	1.80	56.50
18	Lightening Arrestor complete		0.10	1	0.10	56.60
19	Internal fire detection & suppression and complete		1.25	2	2.50	59.10

SCHEDULE OF PAYMENT C-3

PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT

CLUB HOUSE

Srl.	Stage of Work	%payment		No. of Floor	Total for all floors	Cumulative
20	False Ceiling, Wall Paneling, Internal painting including primer, putty & POP cornice finishing complete		5.00	2	10.00	69.10
21	External finishing works external plaster including forming grooves, shaft plaster, trenches, A.T.T. all around periphery, plinth protection, painting of pipes etc.		1.00	1	1.00	70.10
22	Furniture, equipment for gym complete		4.50	2	9.00	79.10
23	HVAC, Audio system, All balance and miscellaneous items		5.00	2	10.00	89.10
24	Swimming Pool including all finishing, electrical , plumbing, filtration system and accessories etc complete		7.00	1	7.00	96.10
25	Supply Lift Machinery (PER LIFT)		0.50	1	0.50	96.60
26	Installation, Testing & Commissioning of Lifts (PER LIFT) including NOC from Competent Authority		0.50	1	0.50	97.10
27	All balance and Misc works		0.40	1	0.40	97.50
28	Comprehensive testing and commissioning of all works and NOC/Completion certificate of all works		1.00	1	1.00	98.50
29	Site Clearance		0.50	1	0.50	99.00
30	Handing over of Building, common areas , common facilities and amenities		1.00	1	1.00	100.00
	TOTAL					100.00

SCHEDULE OF PAYMENT C-3A

PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT

SWIMMING POOL, BALANCING TANK INCLUDING INTERNAL SERVICES

(Refer S. No. 24 of Schedule C-3)

S.No.	Stage of Work	% Payment	Cumulative
1	Bottom Slab & PCC etc	3%	3%
2	Water proofing treatment of Base	5%	8%
3	RCC in Slab ie Deck slab	25%	33%
4	RCC in Walls etc.	14%	47%
5	Water proofing treatment of walls	5%	52%
6	Tiles in Flooring of Pool and Balancing Tank	8%	60%
7	Tiles on walls & channels of pool & balancing tank, Finishing of Balancing Tank's Ceiling etc.	4%	64%
8	Electrification works	3%	67%
9	PCC of Deck Area	3%	70%
10	Flooring of Deck Area.	12%	82%
11	Pumps , Filtration Plant, uPVC pipes and fittings & other Accessories	11%	93%
12	Commissioning and Operation of pool including all remaining works	3%	96%
13	Comprehensive testing and commissioning of all works and obtaining of NOC/ Operating certificate	2%	98%
14	Handing over of Pool etc.	1%	99%
15	Site Clearance	1%	100%
TOTAL			100%

SCHEDULE OF PAYMENT C-4

PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT

GUARD ROOM & GATE

S.No.	Stage of Work	% Payment	Cumulative
1	Earth work, Anti termite Treatment, PCC, Piling, RCC footings, Brick work in foundation upto Plinth level including D.P.C.	25	25
2	Brick work in super structure	15	40
3	RCC roof slab & Beam i/c MS str work	15	55
4	Door/ window frames	1	56
5	Internal & External plastering	2	58
6	Flooring, plinth protection and ramps	3	61
7	Main Gate with foundation, Boom Barrier with RFID etc. complete.	8	69
8	Door/window shutters including painting and finishing	2	71
9	Fixing of Glazing, Hardware and painting	2	73
10	Internal Electrification / Sanitary/ Plumbing work, Electrical connections to the signage boards, external light fittings etc complete	4	77
11	External painting and Finishing	5	82
12	Miscellaneous i.e. plinth protection, roof treatment including RWPs, fixing of signages and lights etc.	10	92
13	Handing Over of building	5	97
14	Site clearance	3	100
	Total		100

SCHEDULE OF PAYMENT C5

PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT
AGAINST TENNIS CUM BASKET BALL COURT

S.No.	Stage of Work	% PAYMENT	CUMULATIVE
1	Preparation of Sub Base	4%	4%
2	First Layer of Soilng	10%	14%
3	Second Layer of PCC	15%	29%
4	Third Layer of PCC M25 with coloured neat cement finish.	15%	44%
5	Marking with paint as per standards	5%	49%
6	Chain Linking Fencing, Net Posts & nets Etc.	25%	74%
7	S/I/T/C of Flood Lights	20%	94%
8	Site Clearance	3%	97%
9	Handing over of Courts	3%	100%
	TOTAL		100%

SCHEDULE OF PAYMENT C-6			
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT AGAINST THE FINISHING OF BOUNDARY WALL			
Boundary Wall			
S.No.	Stage of Work	% Payment	Cumulative
1	Demolishing existing plaster & Repair of Existing Boundary wall wherever required.	10	10
2	After completion of finishing (Internal plaster & Texture work).	30	40
3	After completion of finishing (External plaster & Texture work).	30	70
4	Painting work on railing	10	80
5	Miscellaneous Work	10	90
6	On handing over	10	100
	Total %		100

SCHEDULE OF PAYMENT C-7			
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT AGAINST THE CONSTRUCTION OF ROAD WORKS			
Road Works			
S.No.	Stage of Work	% Payment	Cumulative
1	Removing of grass root, debris stamps and cutting of trees/plants upto 500 mm below and preparation of subgrade with 95% compaction on test of OMC.	3	3
2	Providing and laying of 90-45 mm size stone aggregate complete with rolling etc. (1st Layer)	10	13
3	Providing and laying of PCC in second layer/WBM second layer in fire tender path	10	23
4	Providing and laying of Kerb stone as per drawing.	5	28
5	Providing and laying of Vaccum dewatered RCC in Road	25	53
6	Painting & marking of road works.	10	63
7	Road reflector, speed brackers and overhead signage etc	10	73
8	Providing and laying of CC interlocking and grass pavers/ pathway/pavement etc.	10	83
9	Miscellaneous Work	7	90
10	On final handing over	10	100
	Total		100

SCHEDULE OF PAYMENT C-8			
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT			
External Fire Fighting			
S.No.	Stage of Work	% Payment	Cumulative
1	Excavation for pipe line for all kinds of soil.	5	5
2	Supplying, laying, jointing of ISI pipe complete with all fittings.	15	20
3	Supply & fixing in position IS marked cast iron double flanged butterfly valves with nickel plated disk, nut bolt with 3 mm rubber gasket including testing complete as per drawing.	7	27
4	Connection with distribution line complete with all fittings as per requirement.	12	39
5	Providing & fixing of fire hydrant with all accessories.	7	46
6	Providing, fixing and commissioning of three phase pumps and machines with all accessories complete as per required with all respect.	37	83
7	Hydro test / pressure testing of line	2	85
8	Miscellaneous Work	5	90
9	Obtaining NOC from Fire Department	5	95
10	On final handing over	5	100
	Total %		100

SCHEDULE OF PAYMENT C-9			
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT			
External Water Supply			
S.No.	Stage of Work	% Payment	Cumulative
1	Excavation of trench for all kinds of soil.	5	5
2	Supplying, laying, jointing of ISI marked pipes and valves complete with all fittings.	8	13
3	Supply & fixing in position ISI marked cast iron double franged butterfly valves with nickel plated disk, nut bolt with 3 mm rubber gasket including testing complete as per drawing.	7	20
4	Connection with distribution line complete with all fittings as per requirement.	12	32
5	Making of thrust blocks at bend and support at different location as required.	3	35
6	Providing & fixing of garden hydrant with all accessories.	10	45
7	Construction of valve chamber with finish.	5	50
8	Providing & fixing of precast / SFRC / heavy duty cover with frame.	5	55
9	Providing, fixing and commissioning of three phase variable cum fixed speed hydro pneumatic sets complete with borewell.	25	80
10	Hydrotest / pressure testing of line	5	85
11	Miscellaneous Work	5	90
12	On completion of water supply connection to local authority main line and Internal main line	5	95
13	On final handing over	5	100
	Total %		100

SCHEDULE OF PAYMENT C-10			
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT			
External Drainage Work			
S.No.	Stage of Work	% Payment	Cumulative
1	Excavation of trench for all kinds of soil.	5	5
2	Laying of RCC NP-2 pipe in correct line / level complete with joint and alround concrete including bed concrete.	20	25
3	Back filling with excavated soil in each layer not more than 20 cm compacted layer	15	40
4	Construction of manhole complete with internal / external plaster neat finish including footrest, if required.	20	60
5	Providing & fixing of SFRC cover with grout complete as required in detailed drawings / BOQ.	10	70
6	Testing and commissioning of drainage work.	10	80
7	Miscellaneous Work including supplying, installation, testing and commissioning of pump with suitable automatic operation, float valve including all accessories.	10	90
8	On completion of Drainage connection to local authority main line and Internal main line	5	95
9	On final handing over	5	100
	Total %		100

<u>SCHEDULE OF PAYMENT C-11</u>			
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT			
External Sewerage System			
S.No.	Stage of Work	% Payment	Cumulative
1	Excavation of trench for all kinds of soil.	5	5
2	Laying of Eco Drain pipe in correct line / level complete with joint and haunching including bed concrete/morrum filling.	20	25
3	Back filling with excavated soil in each layer not more than 20 cm compacted layer	15	40
4	Construction of manhole complete with including footrest where ever required.	20	60
5	Providing & fixing of Man Hole cover with grout complete as required in detailed drawings / BOQ.	10	70
6	Testing and commissioning of sewerage work.	10	80
7	Miscellaneous Work including supplying, installation, testing and commissioning of pump with suitable automatic operation, float valve including all accessories.	10	90
8	On completion of Sewerline connection to local authority main line	5	95
9	On final handing over	5	100
	Total %		100

<u>SCHEDULE OF PAYMENT C-12</u>			
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT			
Tube well			
S.No.	Stage of Work	% Payment	Cumulative
1	Obtain permission from Central Ground Water Board or any other authority for boring tubewell	10	10
2	After completion of Drilling / Boring for Pipe	20	30
3	After completion of laying Pipe for Casing	15	45
4	After completion of Fixing/ laying of submersible pump with Electrical work.	25	70
5	After completion of Laying of G.I. Pipe from Tube well point to under ground water tank	20	90
6	Development of cavity, Testing and Handing over.	10	100
	Total %		100

SCHEDULE OF PAYMENT C-13			
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT			
Landscaping & Horticulture			
S.No.	Stage of Work	% Payment	Cumulative
1	Cleaning of area and removal of all kind of debris and levelling work.	2	2
2	Trenching in ordinary soil and filling of good earth with sludge as required.	5	7
3	Supplying and fixing of drain boards and geo textile fabrics	5	12
4	Civil work, water proofing, finishing, stone cladding and Development for landscaping / horticulture in line & level as required including planters, water body, Pergolas, signages etc complete	20	32
5	Supplying and laying good earth for plantation, road, jogging track and pathways etc	10	42
6	Uprooting and fine dressing for plantation complete with mixing of sludge.	3	45
7	Grassing with doob including watering and maintenance upto 30 days	5	50
8	Providing and laying of plant, shrubs and trees, etc in holes including spreading of manure sludge & pesticides etc. complete.	5	55
9	Proving and making of MS Pergolas duly painted, Flooring, Cladding and adjacent finishes as shown in drawings	5	60
10	Construction and commisioning of water bodies including finshing of civil works, stone cladding and providing, testing and commisioning mechanical pump and fountains etc.	10	70
11	Miscellaneous Items like dustbins, drip irrigation, hose,signages, audio speaker system, Garden Furniture, Kids play equipments etc	15	85
12	Maintenance of the landscaped area including Plants, Green area upto 12 months from date of completion.	15	100
	Total %		100

<u>SCHEDULE OF PAYMENT C-14</u>			
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT			
Rain water Harvesting			
S.No.	Stage of Work	% Payment	Cumulative
1	After completion of Excavation work.	10	10
2	After completion of Brick work and provision of over flow pipe etc. complete.	15	25
3	After completion of Drilling / Boring & laying of slotted & plane pipe with fixing of cap etc. complete.	25	50
4	After laying of stone gravels, sand, stone ballast etc. compete.	15	65
5	After laying of RCC slab for covering of well & fixing of SFRC frame and cover etc. complete.	20	85
6	After Miscellaneous work and testing	5	90
7	On connections to main line and NOC from local authority	5	95
8	Handing over.	5	100
	Total %		100

SCHEDULE C-15**PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT AGAINST SUPPLY AND INSTALLATION OF PLUMBING, ELECTRICAL, PUMPS AND MECHANICAL EQUIPMENTS OF STP**

S.No.	Stage of Work	% Payment	Cumulative
1	After approval of Shop drawings	5	5
2	After delivery of material at site and inspection / verification by Architect and CGEWHO	50	55
3	After installation of all equipments	20	75
4	After testing and commissioning of equipments	5	80
5	Misc. works	5	85
6	After getting No objection certificate from the competent authority for operation. (Consent to Operate)	10	95
7	After handing over of STP to CGEWHO	5	100
	Total %		100

SCHEDULE C-16			
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT AGAINST SUPPLY AND INSTALLATION OF PLUMBING, ELECTRICAL, PUMPS AND MECHANICAL EQUIPMENTS OF UGWT & WTP			
S.No.	Stage of Work	% Payment	Cumulative
1	After approval of Shop drawings	5	5
2	Supplying & commissioning of pumps and panels etc.	25	30
3	Providing & fixing electrical fittings with all respects	15	45
4	Supplying & commissioning of WTP etc. complete	30	75
5	Obtain water connection, outlet connection permissions from Concerned Authority	5	80
6	Water & electric connections, testing & commissioning	10	90
7	Misc. works	5	95
8	On final handing over	5	100
	Total %		100

SCHEDULE C-17

PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT AGAINST SUPPLY AND INSTALLATION OF MECHANICAL VENTILATION INSTALLATIONS

S.No.	Stage of Work	% Payment	Cumulative
1	After approval of Shop drawings	5	5
2	After delivery of ducting material at site and inspection / verification by CGEWHO including grills and dampers etc	20	25
3	After installation of all ducts, grills & dampers etc	10	35
4	After delivery of Ventilation Fans at site and inspection / verification by CGEWHO	20	55
5	After installation of all Fans etc	10	65
6	After testing and commissioning of duct and Fans	5	70
8	After delivery of electrical Panels, cables, cable trays and wires etc	15	85
9	After installation cables, panels, wire & cable trays etc	5	90
10	On final handing over & otaning NOC from the Competent Authority (Fire Department) for operation of Mechanical Ventilation Equipment.	10	100
	Total %		100

SCHEDULE C-18			
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT AGAINST THE DIGITAL ADDRESSABLE LIGHTING INTERFERENCE (DALI) SYSTEM			
S.No.	Stage of Work	Percentage Payable	%age Cumulative
1	After approval of Shop drawings	5	5
2	After completion of wiring for automation	10	15
3	After completion of supply and installation of motion & lumen sensor, light fittings etc.	25	40
4	After completion of supply and installation of controller	20	60
5	After completion of 16 DI/O combo digital input and output module for auto/ manual	20	60
6	After completion of touch panel display for monitoring and manual control of LMS software	15	75
7	After completion of cubical/ box (prewired) for mounting of controller with auto/ manual selection switch	15	90
8	After completion of testing and commissioning and 6 months successful operation	10	100
	Total %		100

SCHEDULE -19**PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT AGAINST SUPPLY AND INSTALLATION OF MODULAR KITCHEN**

S.No.	Stage of Work	% Payment	Cumulative
1	After approval of drgs, delivery of complete material at site and inspection / verification by CGEWHO	40	40
2	After installation of Caracus	20	60
3	After Completion of work including fixing of fittings and fixtures	30	90
4	On completion of minimum two months working after handing over	10	100
	Total %		100

SCHEDULE -20**PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT AGAINST SUPPLY AND INSTALLATION OF SOLAR WATER HEATING SYSTEM**

S.No.	Stage of Work	% Payment	Cumulative
1	After approval of drgs, delivery of complete material at site and inspection / verification by CGEWHO	50	50
2	After Installation of Pipes and Insulation work in Terrace and shafts	15	65
3	After installation of Solar system	15	80
4	After Completion of work including fixing of Valves etc and Testing and commissioning of solar system	10	90
5	On completion of minimum two months working after handing over	10	100
	Total %		100

<u>SCHEDULE</u>			
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT AGAINST SUPPLY AND INSTALLATION OF LIFTS (Refer S. No. 23 & 24 of Schedule C-2 & S. No 25& 26 of Schedule C3)			
LIFTS			
S.No.	Stage of Work	% Payment	Cumulative
A	Supply Lift Machinery (PER LIFT)		
1	Advance against Purchase Order	20	20
2	After approval of drawings	20	40
3	After delivery of material at site and inspection / verification by CGEWHO / HUDCO	60	100
	Total %		100
B	Installation, Testing & Commissioning of Lifts (PER LIFT)		
1	After installation, testing and commissioning of lift equipment	70	70
2	After handing over of lift to CGEWHO and after getting No objection certificate from the competent authority (Electrical Department/Lift Inspector) for operation of lifts	20	90
3	On completion of minimum two months working of lift after handing over	10	100
	Total %		100


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SCHEDULE			
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT AGAINST CONSTRUCTION OF STP & PUMP ROOM (Refer S. No. 22 of Schedule C-1)			
STP & PUMP ROOM			
S.No.	Stage of Work	% Payment	%age Cumulative
1	Completion of RCC walls upto slab top with all fittings (sleeve, puddle flang) and foot rest complete with haunches	35	35
2	Construction of slab with manhole cover/Access door and other services	20	55
3	Completion of water proofing	8	63
4	Internal finishing in walls & flooring etc.	10	73
5	Hydro testing of Tank	2	75
6	Obtain Consent to establishment, sewer connection, outlet connection permissions from Concerned Authority/Pollution Control Board	5	80
7	Obtain Consent to operate	10	90
8	Misc. works like ventilation etc	5	95
9	On final handing over	5	100
	Total %		100


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SCHEDULE			
PAYMENT SCHEDULE YARD STICK FOR INTERIM PAYMENT AGAINST CONSTRUCTION OF UNDER GROUND WATER TANK & PUMP ROOM (Refer S. No. 21 of Schedule C-1)			
UNDER GROUND WATER TANK & PUMP ROOM			
S.No.	Stage of Work	% Payment	%age Cumulative
1	Completion of RCC walls upto slab top with all fittings (sleeve, puddle flang) and foot rest complete with haunches	35	35
2	Construction of slab with manhole cover/Access door and other services	20	55
3	Completion of water proofing	8	63
4	Internal glazed tiles in walls & flooring etc.	10	73
6	Hydro testing of U.G. Tank	2	75
9	Obtain water connection, outlet connection permissions from Concerned Authority	5	80
10	Water & electric connections, testing & commissioning	10	90
11	Misc. works	5	95
12	On final handing over	5	100
	Total %		100


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CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCHEDULE D1A	
SCOPE OF WORK	
FOR CIVIL WORKS FOR BASEMENT	
SR. NO.	DESCRIPTION
1.0	EARTHWORK
1.1	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth and removal of rubbish upto any distance outside the periphery of the area cleared.
1.2	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means to depth as per drawings including disposal of excavated earth upto all leads and lift, disposed soil to be levelled and neatly dressed.
a	All Kinds of Soil
1.3	Filling available excavated earth in trenches, plinth, sides of foundations etc. in layers not exceeding 20 cm in depth: consolidating each deposited layer by ramming and watering in all leads and lifts.
1.4	Supplying the good earth from outside including the cost of filling the same within the site in layer not exceeding 20 cm in depth & consolidating each deposited layer by ramming, watering in all lead & lifts etc. complete.
1.5	Supplying, diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment and creating a continuous chemical barrier under and around the column pits, wall trenches, retaining wall, basement excavation, top surface of plinth filling, junction of wall and floor, along the external perimeter of building, expansion joints, over the top surface of consolidated earth, surroundings of pipes and conduits etc. complete as per specifications.
a	Chloropyriphos emulsi-fiable concentrate 20% with 1.0% concentration.
1.6	The tenderer shall deposit all required royalties and take permission from the concerned department for excavation and submit the same to CGEWHO before starting of excavation work.
1.7	Supplying & filling the Jamuna Sand in layer not exceeding 20 cm in depth & consolidating each deposited layer by ramming, watering in all lead & lifts etc. complete.
2.0	DE-WATERING
2.1	Work for excavation shall include bailing or pumping out water which may accumulate in the excavation during the progress of work either from subsoil, seepage, springs, flooding, rain or any other cause and diverting surface flow if any by bunds or other means, pumping out water shall be done in such approved manner as to preclude the possibility of any damage to the foundation trenches, concrete or masonry or any adjacent structure.
	The excavation shall be kept free from water:-
2.1.1	When concreting /reinforcement work/water proofing work are in progress.
2.1.2	Till the casting of Basement roof and water proofing of retaining wall is completed.
2.1.3	Till the CGEWHO/Architect consider that concrete/mortar is sufficiently set.

3.0	DIAPHRAGM WALL
3.1	<p>Design, Approval from Str Consultant, Approval from IIT roorkee & Construction of 600 mm thick or more, diaphragm wall in required R.C.C. Grade of various depth. The scope includes construction of guide wall as per structural design. Grabbing & trenching for diaphragm wall shall be carried out in all type of soil/sand/ gravel/ mud by hydraulic grab and by adopting approved method. Concrete shall be produced in RMC automatic batching plant. The contractor has to submit construction methodology for the approval of engineer in charge.</p> <p>The contractor's scope shall include the cost of following items</p> <ol style="list-style-type: none"> Site clearance before starting the work and after completion of work including survey work. Whenever alignment of diaphragm wall falls in river water, embankment construction above water level shall be considered upto the guide wall level. Excavation upto guide wall and excavated earth to be disposed of within or outside the project boundary. Construction of guide wall in either M15 grade or more concrete or in re-usable MS structural steel, including earthwork in excavation and /or backfilling. Demolishing and stacking of unused material of concrete guide wall after completion of the diaphragm wall as directed by the Engineer. Cost of CRS reinforcement for concrete guide wall is included and shall not be separately payable Trenching by hydraulic grab equipment upto desired depth in all sorts of soil except hard and soft Rock. Concreting by tremie in controlled concrete (machine batched, machine mixed produced in RMC automatic batch mix plant) M30 grade or as per structural consultant (minimum cement content as per technical specification) including cost of all materials, admixtures in recommended proportions as per IS 9103, polymer, labour, tools, plants, and equipments etc. complete with 225 mm wide x 12mm thick PVC water stopper of 100% virgin polymer material and ROHS non - hazardous standard product.
	<ol style="list-style-type: none"> Overflowing of contaminated concrete of 0.6 m height (equivalent volume 0.36 m³ above cut-off level and simultaneously finishing the concrete at cut-off level in green state (Chipping or dismantling of contaminated concrete is not allowed instead equivalent overflowing of concrete is suggested). The cost of dewatering would not be payable to contractor. The cost of reinforcement of diaphragm wall will not be paid separately, however additional cost for lowering of reinforcement cage is also included in item rate. The scope shall cover costs towards extra concrete consumed due to voids, pockets, bulges, side collapse of earth faces etc. The scope of work shall include the anchors including Drilling, Grouting, Stressing and Destressing as required The requirement of D wall shall be as per structural consultant. The responsibility for safety shall be in the Contractor's scope only. Pressure guniting minimum 50 mm cement concrete 1:3 (1 cement:3 C sand) above the water proofing membrane as a protection layer to water proofing including welded wire mesh of weight 1.5 kg/ sq m complete as per codal provisions / specifications. The charges/fee for approval shall be including in the quoted rates. Nothing extra shall be paid in this regard.
4.0	CONCRETE WORK
4.1	Providing and laying in position cement concrete of specified grade, including the cost of centering and shuttering. All work upto plinth level.
a	1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size).
b	1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size).

4.2	Providing and laying cement concrete in string or lacing courses, parapets, copings, bed blocks, anchor blocks, plain window sills, fillets etc. at all floors, including the cost of centering, shuttering and finishing.
a	1:2:4 (1 cement: 2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size)
4.3	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement :2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size) including providing and mixing water proofing material in cement concrete work @ 1 Kg per 50 kg of cement with Bitumen coating.
5.0	WATER PROOFING
5.1	Supplying and installing 1.2mm thick self-adhesive HDPE membrane having the following technical properties-Puncture resistance 1000 N (as per ASTM E 154) ,Tensile strength of 25 Mpa as per ASTM D412,Elongation of 500% as per ASTM D 412, Resistance to hydrostatic head > 60M as per ASTM D 5385,Peel adhesion to concrete 880N/m as per ASTM D 903. The system should be fully bonded to the RCC and consists of highly resilient HDPE layer, a pressure sensitive adhesive layer which is covered by a weather proof protective layer. The membrane shall have minimum of 75mm side and end laps which shall be sealed with double sided adhesive tape. The size of the membrane should not be less than 2Mtr. x 20 Mtr. to minimize the joints.The entire waterproofing treatment should be guaranteed by the principal manufacturer as a system, for ten years and the work should be executed as per manufacturer recommendations. (Under Raft)
5.2	Providing and Placing in position suitable PVC water stops conforming to IS:12200 for construction/ expansion joints between two RCC members and fixed to the reinforcement with binding wire before pouring concrete etc. complete :
a)	Dumb bell with central bulb (180mm wide, 8mm thick).
5.3	Providing and fixing Swell able water bar 20 X 10mm at construction joint and junction of raft and retaining wall.
5.4	Providing and laying of 1.5 mm thick SBS based self-adhesive waterproofing membrane topped with minimum 0.35 mm thick hdpe cross laminated film with the following technical properties-Softening point >105 as per ASTM D36,Tensile Strength (L/T), (N/mm ²)Film L 34-50 & T 40-56 as per ASTM D882,Elongation (L/T) film, (%) L 200-260 ,T 160-200 as per ASTM D 882, Tear Resistance (L/T) film , (N) L 240 -440,T 220-400 as per ASTM D 1004, Puncture Resistance, (N)Film >200 as per ASTM E 154, Hydrostatic pressure > 50 m (5BAR) No leakage as per BSEN12390(part 8) ,Peel Adhesion strength, (L/T),(N/ mm) Primed Substrate Self >1 as per ASTM C974 including cleaning the surface,priming the surface with cold applied bituminous primer@4-6 sqmtr/litre, properly sealing the joints & maintaining 75 mm overlap between the membrane selvedge & 100 mm overlap on the end joints of the membrane over the slab etc. complete.The entire waterproofing treatment should be guaranteed by the principal manufacturer as a system, for ten years and the work should be executed as per manufacturer recommendations. (On Vertical surfaces of wall)
5.5	Providing & Fixing of protection board 8MM HDPE Dimple board spot bonded on retaining wall before backfilling.

5.6	Providing aluminum flashing, wherever required for termination of self adhesive membranes at all locations. Item shall include rates for membrane termination on the Vertical retaining wall at height as specified in drawings for termination of the membrane and finally sealing the strip using Polysulphide sealant.
5.7	Provide and Applying liquid-applied, highly permanent elastic, cold applied and cold curing, one component, based on pure elastomeric hydrophobic polyurethane resins, Solvent based with root resistance properties polyurethane membrane with elongation of 400% as per ASTM D 412, tensile strength of 4 Nsqmm as per ASTM D412, shore hardness (shore A scale) 65 as per ASTM D 2240, adhesion to concrete > 2.0 N/mm ² as per ASTM D 903 applied in 2 coats at a total consumption of min. 1.8 Kg./Sq.Mt. to achieve a DFT of 1.2 mm over one coat of PU primer (@200 gms/sq.mtr. The entire waterproofing treatment should be guaranteed by the principal manufacturer as a system, for ten years and the work should be executed as per manufacturer recommendations.. The work shall include Compressed air cleaning so as to make the surface free of dust, debris, laitance etc. Repairing cracks by cutting and making V-groove in 25x25 mm, with SBR polymer modified mortar Dr. Fixit Pidicrete URP. filling the groove with CM(1:3) mixed with polymer 10% by weight of cement including Providing and making fillets at the junction of the walls and the slabs using cement mortar of 1:4 mix admixed with 5 % of URP by weight of cement complete. (In UGWT, STP and Extended Basement horizontal and vertical surfaces)
5.8	Supply and installation of Rolled Matrix Soil Filter cum surface drainage System as per manufacturers specifications. It consist of dimple raised, moulded polypropylene sheet bonded to a high strength polypropylene geotextile fabric This geotextile fabric composite allows passage of moisture through fabric while preventing fine soil from entering to drainage channel.
5.9	Providing and laying minimum 50 mm Screed concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) above the water proofing membrane as a protection layer to water proofing in slope as per drawing including welded wire mesh of weight 1.5 kg/ sq m and 50mm thickness pressure guniting on top complete as per specification
5.10	INTEGRAL CRYSTALLINE WATER PROOFING
	Providing and laying Integral crystalline water proofing material for horizontal and vertical surface and entire thickness of Under ground Structures like U G Tank, STP, Retaining wall, Stitch Slab, Raft, pile cap etc and Over ground RCC water retaining structures like OHT in specified proportions (minimum 2 % of weight of cement or as specified by the manufacturer). Properly Mixing in RMC/BMC/RCC in specified proportions as per the approved brand of crystalline waterproofing material like Xypex 2000 NF/ Panetron/Kryotone etc with RMC/BMC. Thoroughly mixing to workable consistency and pouring and casting in position within 20 minutes, Vibrating with mechanical vibrators and compaction etc. complete as per direction of Engineer In-charge.

	The water proofing compound used in integral crystalline water proofing treatment shall satisfy all the requirements indicated in relevant BIS standards and shall be got tested before and after its use. Total quantity of the water proofing compound required shall be arranged only after obtaining the prior approval of the CGEWHO/Architect in writing. Materials shall be kept under double lock and key and proper account of water proofing compound used in the work shall be maintained. It shall be ensured that the consumption of the compound is as per specified requirements. Contractor shall associate himself with anyone of the specialist firms mentioned in approved list of specialized agencies for the work relating to the Water Proofing Treatment. In case the contractor intends to get the water proofing work executed from an agency other than as specified, he shall apply to the CGEWHO/Architect in writing along with the credentials and relevant details including name of owner/company, its location, capacity technical establishment, past experience etc. CGEWHO/Architect shall give approval in writing and the work shall not be started without said written approval of the CGEWHO/Architect. The entire responsibility for the quality of this treatment and its efficiency shall however, rest with the main contractor only.
5.11	Making khurras 45 x 45 cm with average minimum thickness of 5cm cement concrete 1:2:4 (1 cement : coarse sand : 4 graded stone aggregate of 10 mm nominal size) over P.V.C sheet 1m X 1m X400 micron, finished with 12 mm cement plaster 1:3 (1 cement :3 coarse sand) and a coat of neat cement rounding the edges and making and finishing the outlet complete.
5.12	Injection Grouting with cement slurry and admixed with non shrinking grouting compound through nozzle under pressure by pump at every 1m vertical and horizontal distance to all RCC structure,STP, under ground and over ground (water retaining structures like OHT). the nozzle shall be sealed off after injection operation is over with pozzolith 100 HE admixed with cement.
6.0	REINFORCED CEMENT CONCRETE WORK
	ALL RCC WORK is in or under water and/ or liquid mud, including cost of pumping or bailing out water and removing slush etc., complete.
	Note: No additional payment will be made for a richer mix of column spread into beam/slab during casting.
6.1	Providing and laying in position machine batched, machine mixed and machine vibrated RMC/ Design mix cement concrete of M-25 grade for reinforced cement concrete structural elements including the cost of centering, shuttering, finishing and admixtures in recommended proportions (as per IS: 9103) to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per directions of CGEWHO/Architect/PMC. (Minimum Cement content for M-25 shall be @ 330 kg/cum)
a)	All works upto plinth level including Raft foundation, Stitch Slab, isolated/combined footings, Columns, retaining walls, staircase, plinth beams , slab & beams etc including all other possible locations.
6.2	Add for providing richer mixes at all heights, depths and levels.
a	Providing M-30 grade R.C.C. instead of M-25 grade R.C.C. (Minimum Cement content for M-30 shall be @ 340 kg/cum)
b	Providing M-35 grade concrete instead of M-25 grade R.C.C.(Minimum Cement content for M-35 shall be @ 350 kg/cum)
c	Providing M-40 grade concrete instead of M-25 grade R.C.C.(Minimum Cement content for M-40 shall be @ 360 kg/cum)

6.3	Providing, hoisting and fixing at all levels precast reinforced cement concrete in lintels exceeding 0.75 m clear span at all heights & floors including the cost of required centring and shuttering with 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size).
6.4	Reinforcement steel (CRS-Fe 500 D) for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete at all levels and in all R.C.C. items with 18 gauge binding wire and cover blocks of specified thickness in CM (1:3) complete, as per drawings and specifications at all heights and levels.
a	Corrosion Resistant Steel (CRS) Thermo mechanically treated bars confirming to Fe-500 D grade
6.5	Extra for additional height in centering, shuttering wherever required with adequate bracing, propping etc including cost of de-shuttering and de-centering at all levels, over a height of 3.5m for every additional height of 1 metre or part thereof.
a	Suspended floors, roofs, landings, beams and balconies.
6.6	Extra for laying reinforced cement concrete in or under water and/ or liquid mud, including cost of pumping or bailing out water and removing slush etc., complete.
6.7	Making of cutouts on slab/ Retaining wall surface of basement and making them closed and good the same similar finishing to the adjacent surfaces.
6.8	Providing and placing Rebars of the following dia of Reinforcement including designing depth, drilling, fixing with specified chemical as per the specification of HILTI or equivalent including conducting the pull out test as per standard norms/IS code. The minimum depth of rebarring shall be 10d.
6.8.1	8mm dia
6.8.2	10 mm dia
6.8.3	12 mm dia
6.8.4	16 mm dia
6.8.5	20 mm dia
6.8.6	25 mm dia
6.9	Providing and applying NETOBOND chemical over the joint of existing concrete and new poured concrete before casting as per specification of the manufacturer.
7.0	BRICK MASONRY WORK
7.1	Brick work with common burnt clay FPS bricks of class designation 10 in foundation and plinth in cement mortar 1:6 (1 cement:6 coarse sand).
7.2	Brick work with common burnt clay FPS bricks of class designation 10 in cement mortar 1:6 (1 cement : 6 coarse sand) in superstructure above plinth level, upto any floor in all shapes and sizes as shown in drawings
7.3	Half brick masonry of common burnt clay FPS bricks of class designation 10 in cement mortar 1:4 (1 cement: 4 coarse sand) in superstructure above plinth level upto all floors and level including providing and placing 2 nos. 6 mm dia M.S. bars at every fourth course as shown in drawings.

8.0	WOOD WORK
8.1	Providing and fixing factory made door/window frames in Mango wood in Single/double rebate frames of following sizes including 35x12mm wooden moulding of Mango wood all around the frame, one side flush with brick or block work/ column and fixed in position with M.S. hold fasts 40 x 5 mm and 300 mm long 3 nos. on each side or 100 mm long gun metal dash fastener in case of RCC column/solid RCC block, including grooves and making arrangement as shown on drawing, applying anti-termite paint on surfaces touching masonry or concrete etc. complete
a	100 mm x 65 mm
8.2	Providing and fixing 35 mm thick flush door shutter , Non decorative type confirming to IS: 2202 (Part 1) , core of block board construction with frame of 1st class hard wood and well matched 3 ply commercial vennering on both faces of shutters using phenol formal-dehide synthetic resin (conforming to B.W.P. Type specified in IS:848 1974) including 6 mm thick external lipping of 2nd class teak wood glued & nailed all around complete, painting with 2 or more coats with spray synthetic enamel paint over a coat of wood primer to give an even shade.
8.3	Providing 40x5 mm flat iron hold fast 40 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embeddings in cement concrete block 30x10x15cm 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size)
8.4	Providing and fixing Stainless steel (304 grade) fitting of approved make with necessary screws etc. complete.
a)	Sliding aldrops
	250 x 16 mm or as required
b)	Tower Bolt
i)	600 x 10mm or as required
ii)	250 x 10mm or as required
iii)	150 x 10mm or as required
c)	Handles
i)	125mm with plate 175 X32 mm
d)	Hanging floor door stopper 150 mm or as required
e)	40mm dia rubber buffer of required length with necessary stainless steel screws etc. complete
f)	Stainless steel butt hinges with necessary screws etc. complete
i)	125 x 70 x 4 mm hinges or as required
j)	Mortice latch & lock with six levers and a pair of lever handles (Dorset-Orius ORS/ SS or GEZE -8116431 SS finish)with necessary screws etc complete (Cylinder with one side Knob and other side Key)
8.5	Supply and Fixing of 46mm thick Fire Check door of 120 minutes fire rating fabricated with 1.2mm thick galvanised sheet with infill of fire rated Acrylic Sealant and non-combustible core bonded to both faces of sheet with lock seam joints at stile edges and internal reinforcement at top, bottom and stile edges for fire rating. The door frames are manufactured from 1.6mm thick galvanised steel sheet pressed from to double rebate profile of size 143mm x 57mm. The door frames and door shutters are finished with zinc chromate primer in accordance with BS 476 Part 22 and IS 3614 Part II for 2 Hrs. rating complete.The door frames and door shutters are inclusive of all hardware fittings as per requirement of Fire authority.

9.0	STEEL WORK
9.1	Providing and fixing Powder Coated M.S. staircase railing by welding etc, complete and fixing to the wall, floor with necessary C.C., holdfast, anchor fastner etc & making good the same as per details shown in drawing.
a	M.S. tube (medium), M.S. square bars & M.S. flat or in their combination for staircase railings, ladders, frames etc
9.2	Providing & fixing in position D. I. grating (Min B-Grade) made out of Ready made DI grating and M.S/D.I. angle iron frame fixed with RCC including applying two or more coats of synthetic enamel paint over one coat of steel primer complete as per details shown in drawing.
9.3	Structural steel work welded in built up Section trusses and frame work etc. for external façade, column protection or any other location as shown on drawing for all heights including cutting, hoisting, scaffolding, fixing in position and applying two or more coats of synthetic enamel paint over a priming coat of approved steel primer all complete as shown in drawings.
a	M.S. tubes, plates, angles etc.
9.4	Providing and fixing 14 gauge 50mm dia M.S. pipe/ M.S. D-shape hand rail section for hand rails of required shape and profile, including welding and fixing in position at all places and levels, including 2 or more coats of enamel paint over a coat of red oxide primer on all steel surfaces of approved make and manufacturer complete.
9.5	Providing and fixing T-iron frames for doors, windows of M.S. section, joint, mitred & welded with 15x3mm lugs 10cm long embedded in cement concrete blocks 15 x 10 x 10cm of 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) or as required including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer including 1mm thick M.S. sheet door with frame of 40 x 40 x 6mm angle iron and 3mm M.S. gusset plate at the junction and corners, all necessary fittings complete including a priming coat of approved steel primer using flats 30 x 6mm for diagonal braces & central cross piece.
9.6	Providing and fixing circular/ hexagonal cast iron or M.S. sheet box for ceiling fan clamp of internal dia 140mm, 73mm height top lid of 1.5mm thick M.S. sheet with its top surface hacked for proper bonding, top lid shall be screwed into the cast iron/M.S. sheet box by means of 3.3mm dia round headed screws, one lock at the corners. Clamp shall be made of 12mm dia M.S. bar bent to shape as per standard drawing.

10.0	FLOORING
	Note: Standard flooring margin is 50mm (except for stilt & basement flooring) including margins for adjustment of provision of slope and drops. Nothing extra shall be paid for additional thickness of mortar required in flooring.
10.1	Providing and laying at all floors 1st quality ceramic glazed tiles in flooring conforming to IS: 15622 of size 300 x 300 mm (thickness to be specified by the manufacturer) of approved make in all colours, shades as approved by CGEWHO/Architect, laid over 20 mm thick bed of cement mortar 1:4 (1 cement : 4 coarse sand) including pointing the joints with white cement mixed with pigment of matching shade and cleaning the surface complete in all respects. This shall also be provided in wall dado and flooring of underground tank, STP etc (Basic rate of ceramic tile will be Rs. 350 per sqmtr).
10.2	Providing and fixing at all floors 1st quality Polished glazed vitrified tiles (PGVT) of size 600 x 600 mm and 8-10 mm thickness with water absorbtion less than 0.8% and conforming to IS:15622 in all colours, shades and pattern of any size as approved by the CGEWHO/Architect in flooring laid over 20 mm thick bed of cement mortar 1:4 (1 cement : 4 coarse sand) and jointing with grey cement slurry @ 3.3 Kg per sqm including pointing the joints with white cement mixed with matching pigments and cleaning the surface complete in all respects. (Basic rate of Vitrified tile will be Rs 700.00 per sqmtrs)
10.3	Providing and fixing at all floors 1st quality Polished glazed vitrified tiles (PGVT) of size 600 x 600 mm and 8-10 mm thickness with water absorbtion less than 0.8% and conforming to IS:15622 in all colours, shades and of any size as approved by the CGEWHO/Architect in skirting, risers of steps and dados laid over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3 Kg per sqm including pointing the joints with white cement mixed with matching pigments and cleaning the surface complete in all respects. (Basic rate of Vitrified tile will be Rs 700.00 per sqmtrs)
10.4	18 mm thick Pre-polished Granite stone slab in flooring of staicase landing, lobby & other areas etc in different shades and pattern as shown on drawing and approved by CGEWHO/Architect over 20 mm (average) thick base laid over and jointed with cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete with base of cement mortar 1:4 (1 cement : 4 coarse sand) (Basic Rate Rs. 1200 per sqmtrs).
10.5	18 mm thick Pre-polished Granite stone in Treads, Riser, Skirting and dado in different shades and pattern as shown on drawing and approved by CGEWHO/Architect over 12-20 mm (average) thick base laid over and jointed with cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete with base of cement mortar 1:4 (1 cement : 4 coarse sand) (Basic Rate Rs. 1200 per sqmtrs). The single piece of stone shall be fixed in treads and risers.
10.6	20 mm thick sorted Kota stone slab flooring of pump room in different shades and pattern as shown on drawing and approved by CGEWHO/Architect over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete with base of cement mortar 1:4 (1 cement : 4 coarse sand) (Basic Rate Rs. 400 per sqmtrs).

10.7	20 mm thick sorted Kota stone skirting in pattern as shown on drawing and approved by CGEWHO/Architect over 12 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete with base of cement mortar 1:3 (1 cement : 3 coarse sand) (Basic Rate Rs. 400 per sqmtrs).
10.8	Providing and fixing at all floors 18 mm thick pre polished granite stone slab of colour and shade as approved by the Architect/Project Manager in lift facia walls, dados including rounding of edges as shown in drawing laid on 20mm thick bed of cement mortar 1:2 (1 cement: 2 coarse sand) and jointing with grey cement slurry @ 3.3. kg per sqm including pointing the joints with white cement mixed with matching pigment and cleaning the surface complete in all respects including the cost of SS clamp as required.(Basic rate of Granite Stone will be Rs 1200.00 per sqmtrs)
10.9	Providing and laying design mix 75 to 100 mm Vacuum dewatered cement concrete flooring with broom finish in Basement, roads,driveways having a minimum works test beam flexural strength of 30 kg. per cm2. at 28 days using not less than 340 Kg. of cement per cum of finished concrete, coarse sand and graded stone aggregate of 20mm nominal size in appropriate proportions as per specified design criteria approved by CGEWHO / Architect mechanically vibrated using needle and surface vibrators including steel form work with sturdy M. S. channel sections including curing and providing and filling construction joints and dummy joints with approved joint filler and primer including rounding of the edges and filling the grooves 10x25mm deep at top for construction joints and 10mmx50mm deep at top for dummy joints with joint sealing compound (conforming to grade B of IS : 1834) including making necessary arrangements for expansion joints etc. all complete as per design and drawing.
10.10	Providing and making grooves 10mm wide & 15mm deep in Vacuum dewater concrete in ramps of basement in pattern approved by the CGEWHO/Architect and cleaning the surface complete in all respects.
10.11	Providing and laying at all floors cement plaster skirting 18 mm thick with cement mortar 1:3 (1 cement: 3 coarse sand) finished with a floating coat of neat cement.
10.12	Extra for mixing "Hardcrete" concrete hardener in Vacuum dewatered cement concrete flooring in Ramp by volume with Hardcrete hardening compound of Snowcem India Ltd. or BASF is mixed @ 2 litre Hardcrete per 50 kg of cement including cement slurry complete.
11.0	FINISHING
11.1	Providing & applying Ready mix plaster with sand ready mix dry mortar in bags for plastering from the approved manufacturer in readymade PP bags of high quality laminated bags/Ad star bags. The specifications for cement used should be in line with IS 4031-1988 for physical tests and IS 1542-1977 & IS 2116-1980 accordingly. The power additives used should be of good quality make. The Ready Mix Mortars should complies to IS 2250-1981 with water to power ratio of 0.16-0.19 and having min 28 day pullout strength requirement of >0.3 MPa (as per ASTM D 7234-12) and 28 days compressive strength of > 5MPa (as per ASTM C 109-95). Also product should meet the VOC standards of <1% by Mass, including scaffolding, tool & plants etc Complete
a)	12 mm Ready Mix plaster on 230mm thick brick walls.
b)	15mm Ready Mix plaster on the rough side of single or half brick wall.

c)	6 mm Ready Mix plaster to ceiling including grooves.
d)	18 mm Ready Mix plaster in two coats under layer 12 mm thick Ready Mix plaster and a top layer 6 mm thick Ready Mix plaster mixed with approved water proofing compound 2% by weight of cement and finished smooth on the external surface of buildings for all heights and levels including forming grooves, scaffolding etc as per drawings.
e)	15mm Ready Mix plaster mixed with water proofing compound on the RCC walls /brick wall
11.2	Providing and fixing 150 mm wide chicken wire mesh of 22 gauge on the wall/column/beam junctions and over PVC conduit and GI/CPVC pipe with nails etc. complete.
11.3	Providing and applying Cement based putty in line and level over plastered surface to prepare the surface even and smooth complete and to the satisfaction of CGEWHO/Architect as follows:
a	For internal walls (Min 2mm Thick)
b	For external walls (Min 2mm Thick)
11.4	Wall painting with Premium acrylic emulsion paint of interior grade having VOC (Volatile Organic compound) content less than 50 grams /litre of approved brand and manufacture, including applying 2 or more coats where ever required to achieve even shade and colour. (as approved by CGEWHO/Architect) including one priming coat with primer of approved brand and manufacture, having low VOC content with water thinnable cement primer on wall surface having VOC content less than 50 grams/lite. (In Common Area, Staircase & Lift Lobby)
11.5	Finishing exterior walls with Textured painting (exterior grade) applied @ 3.28 kg/10 sqm over and including priming coat applied @ 2.20 lt/10Sqm of approved make shade and colour on all heights and levels. The rate shall include all operations of work & scaffolding required for painting at all heights and as per specifications.
11.6	Applying priming coat with ready mixed Red oxide zinc chromatic primer with VOC content less than 250 grams/litre of approved brand and manufacture on steel work.
11.7	Painting with synthetic enamel paint having VOC content less than 50 grams/litre of approved brand and manufacture including applying 2 or additional coats where ever required to give an even shade with two or more coats on new work.
11.8	Applying priming coats with Primer of approved brand and manufacture having ready mixed pink or grey primer on wood work having VOC content less than 50 grams/litre
11.9	Wall painting with 1st. quality acrylic distemper (ready mix) having VOC (Volatile Organic compound) content less than 50 grams /litre of approved brand and manufacture, including applying 2 or additional coats where ever required to achieve even shade and colour. (as approved by CGEWHO/Architect) including one priming coat with primer of approved brand and manufacture, having low VOC content with water thinnable cement primer on wall surface having VOC content less than 50 grams/lite.
a)	Basement parking except lift lobby

11.10	Finishing walls and ceiling with water proofing cement paint of approved shade, brand and manufacture including 2 or more coats @ 3.84 kg/10 sqm where ever required to achieve even shade and colour in UGWT and STP.
12	ALUMINIUM WORK
12.1	Providing and fixing anodised aluminium box section frame and shutters with 75 mm wide louvers including necessary hinges, handles, locks and all fittings as per drawings for shafts coverings. (Electric, LV, Plumbing etc shafts)
a	Aluminum Frame in approx 50mm x 100 mm section
b	Aluminum Door panel in approx 50 mm x 50 mm section
12.2	Providing and fixing Red colour powder coated (60 micron) aluminium box section frame and shutters with 5 mm thick clear glass including necessary hinges, handles, tower bolts, mortised lock etc all fittings as per drawings for shafts coverings. (fire shafts) . The door shall be Factory Fabricated.
a	Aluminum Frame in approx 50mm x 100 mm section
b	Aluminum Door panel in approx 50 mm x 50 mm section
12.3	Providing and fixing machine moulded aluminium covering of approved patterns & design, made out of machine holed for receiving dashed fastners, over expansion joints on vertical surfaces /ceiling floors , the fixing on plate in one row on one side of jointing shall be done with stainless steel dash fastners of 8mm dia and 75 mm long bolt including providing aluminium washers 2mm thick & 15mm dia, at a staggered pitch of 200mm centre to centre including drilling holes in the receiving surface and providing expandable plastic sleeves in holes etc as per direction of CGEWHO/Architect.
a	Anodised aluminium sheet 2.5 mm thick (anodised transparent or dyed to required shade according to IS: 1868, minimum anodic coating of grade AC 15)
b	Powder coated aluminium sheet 2.5 mm thick (minimum thickness of powder coating 50 micron)
c	Providing and fixing of 40 to 200mm wide expansion joint system related with floor location as per drawings and direction of Engineer-In-Charge. The joints system will be of extruded aluminum base members, self aligning / self centering arrangement and support plates etc. as per ASTM B221-02. The system shall be such that it provides floor to floor /floor to wall expansion control system for various vertical location in load application areas that accommodates multi directional seismic movement without stress to it's components. System shall consist of metal profiles with a universal aluminum base member designed to accommodate various project conditions and finish floor treatments. The cover plate shall be designed of Aluminium of required thickness and width to satisfy projects movement and loading requirements and secured to base members by utilizing manufacturer's pre-engineered self- centering arrangement that freely rotates / moves in all directions. The Self – centering arrangement shall exhibit circular sphere ends that lock and slide inside the corresponding aluminum extrusion cavity to allow freedom of movement and flexure in all directions including vertical displacement. Provision of Moisture Barrier Membrane in the Joint System to have watertight joint is mandatory requirement all as per the manufactures design and as approved by Engineer -in- Charge . (Material shall confirm to ASTM 6063.)
12.4	Filling the gap in between aluminium frame and adjacent RCC/Brick/Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of CGEWHO/Architect complete.
a	upto 5mm depth & 5mm width

13.0	FALSE CEILING
13.1	Providing and fixing tiled false ceiling of approved material of size 595x595mm in true horizontal level , suspended on interlocking metal grid of hot dipped galvanised steel sections (galvanised @ 120gm/sqm, both side inclusive) consisting of main "T" runner with suitably spaced joints to get required length and of size 24x38mm made from 0.30mm thick sheet, spaced at 1200mm c/c to form a grid of 1200x600mm and secondary cross "T" of length 600mm and size 24x25mm made of 0.30mm thick sheet to be interlocked at middle of the 1200x600mm panel to form grid of 600x600mm and wall angle of size 24x24x0.30mm and laying false ceiling tiles of approved texture in the grid including required cutting/making , opening of services like diffusers, grills, light fittings, fixtures, smoke detectors ect. Main "T" runners to be suspended from ceiling using GI slotted cleats of size 27x37x25x1.6 mm fixed to ceiling with 12.5 mm dia and 50mm long dash fastners ,4x0.8mm spaced at 1200 mm c/c along main "T" , bottom exposed width of all T-sections shall be pre painted with polyster paint , all complete for all heights as per specifications, <u>drawings and as directed by CGEWHO/Architect.</u>
a	GI metal ceiling lay in plain Tegular edge global white color tiles of size 595x595 mm and 0.5 mm thick with 8mm drop; made of GI sheet having galvanising of 100gm/sqm both sides inclusive and electro statically polyster powder coated of thickness 60 microns minimum, including factory painted after bending. (To cover the plumbing pipes)
14.0	MISCELLANEOUS WORK
14.1	Making plinth protection 50 mm thick of cement concrete 1:3:6 (1 cement: 3 coarse sand: 6 graded stone aggregate 20 mm nominal size) over 75 mm bed of dry brick ballast 40 mm nominal size well rammed and consolidated and grouted with fine sand including finishing the top smooth, centering and shuttering complete.
14.2	Supplying and fixing 10 mm thick multi wall poly carbonate sheet with aluminium profile (powder coated) with EPDM gasket in between with self drilling screws, necessary silicones to make the structure water tight complete as per drawing and fixed to steel structure with necessary base plates complete in all respects, all as per manufacturer's specifications and Architects directions (make: GE or approved equivalent). (For Ramp Cover)
14.3	providing and fixing of Letter boxes of standard size with locking arragment with marking of dwelling unit number on letter box of approved colour and make complete.
14.4	Providing and fixing Reflective Rubber Column Protection Guard 1mtr high and min 10mm thick fixed with Necessary glue/screws etc complete for all four corners.
14.5	Providing and laying Foam concrete in sunken portion
14.6	Core cutting in RCC structure of any dia required as per specification / drawing including the cost of supplying and applying Acrylic Polymer mortar for filling gap around the pipe and core hole as per specifiacion.

14.7	Painting Parking slots, driveways, parking numbers etc with adequate no. of coats to give uniform finish with road marking paint of superior make as approved by the CGEWHO/Architect i/c cleaning the surface of all dirt, scales, oil, grease and other foreign material etc. and lining out complete.
	New work (two or more coats)
15.0	EXPANSION JOINTS
15.1	Expansion joints shall be provided where shown on the drawings or as directed by CGEWHO/Architect. They shall be constructed with an initial gap between the adjoining parts of the works of the width specified in the drawings. The contractor shall ensure that no debris is allowed to enter expansion joints. Expansion joints shall be provided as per drawing. Contractor shall ensure that expansion joints are made watertight and that no leakage occurs through these joints for which he shall be responsible to re do at his own cost.
15.2	OPEN JOINT FILLERS
	Where shown on the drawings, open joints in the structure shall be filled with joint fillers. The joint fillers shall be easily and uniformly compressible to its original thickness, tappable, easily cut or sawn, durable resistant to decay due to termite or weathering unaffected by water and free of any constituent, which will bleed into or stain the concrete. The joint filler shall be of same thickness of the joint width, it shall extend through the full thickness of the concrete unless otherwise specified and shall be sufficiently rigid during handling and placing to permit the formation of straight joints.
15.3	JOINT SEALING COMPOUNDS
	Joint sealing compounds shall seal joints in concrete against the passage of water, prevent the ingress of grit or other foreign material and protect the joint filler. The compound shall have good extensibility and adhesion to concrete surfaces and shall be resistant to flow and weathering. Poly-sulphide joints where specified on the drawings shall be sealed with polysulphide liquid polymer, stored, mixed, handled, applied and cured strictly in accordance with the manufacture's written instructions. Such joint shall be formed to the correct dimensions, thoroughly cleaned and treated with recommended primer strictly in accordance with the manufacturer's written instructions prior to sealing. The Contractor shall use only competent personnel experienced in the application of polysulphide for such work. Where specified in the drawings, rubber/bituminous based sealants shall be of an approved manufacturer's written instructions.
15.4	WATER BARS
	Where water bars are shown on the drawings, the joints shall incorporate an approved PVC external type water-bar complete with all necessary molded or prefabricated intersection pieces assembled in accordance with the drawings with bends and butt joints in running lengths made by heat welding in an electrically headed jig. Jointing and fixing of water bars shall be carried out strictly in accordance with the manufacturer's written instructions. The water bars shall be installed so that they are securely held in their correct position during the placing and compacting of the concrete. Where reinforcement is present adjacent to water bars, adequate clearance shall be left between the reinforcement and water bars to facilitate compaction of the concrete. During headed nails may be used in the edge of the water bar outside the line of the external grooves for fixing purposes, but no other holes shall be permitted through the water bar.

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION
SCHEDULE OF FINISHES- BASEMENT

SCHEDULE D1B

S.N.	Details	Flooring	Wall finishes		Door	Windows/ Ventilators	Railing
			Interior	Exterior			
	BASEMENT						
1	Lift well & Pit	50mm th Cement Concrete Flooring with water proofing compound	White wash on walls & ceiling .	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	As per Vendor	-	-
2	Lift Lobby	Grante Flooring	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion smooth paint with primer	Cement base putty, 2 or more coats of Acrylic Distemper paint	G. I Fire Check Door as per approved make	-	-
3	Staircases	Granite Flooring, single stone in riser and treads & Matching skirting.Treads shall be in with Flamed striped Granite stone	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion smooth paint with primer	Cement base putty, 2 or more coats of Acrylic Distemper paint	G. I Fire Check Door in Staircase as per approved make	-	Powder Coated M.S. Railing
4	Parking Area	100 MM Thk. Vacuum Dewatering Cement Concrete Flooring.	Cement base putty, 2 or more coats of Acrylic Distemper paint	Cement base putty, 2 or more coats of Acrylic Distemper paint	-	-	-
5	Ramp	100 MM Thk. Vacuum Dewatering Cement Concrete Flooring with grooves of size 10x15mm in approved pattern.	Cement base putty, 2 or more coats of Acrylic Distemper paint	Cement base putty, 2 or more coats of Acrylic Distemper paint, Roof shall be covered with Polycarbonate sheet over MS work.	-	-	-
6	Lift Facia	-	-	Granite Cladding including SS cramps	-	-	-
7	Under round Water Tank	White Colour Glazed Tiles in tanks and Kota stone flooring in Pump Room	White Colour Glazed Tiles in tanks and Kota stone skirting in pump room	Cement base putty, 2 or more coats of Water proofing cement paint	G. I Fire Check Door as per approved make	-	-
8	STP	50mm th Cement Concrete Flooring with water proofing compound in tanks and Kota stone flooring in pump room	18mm th Cement Plaster with Neat Cement Finish in tanks and Kota stone skirting in pump room	Cement base putty, 2 or more coats of Water proofing cement paint	G. I Fire Check Door as per approved make	-	-
9	LT Panel Room	Kota stone flooring with matching skirting	Cement base putty, 2 or more coats of Acrylic Distemper paint	Cement base putty, 2 or more coats of Acrylic Distemper paint	G. I Fire Check Door as per approved make	-	-



GARG & ASSOCIATES
 48, REGAL BUILDING
 CONNAUGHT PLACE
 NEW DELHI-110001
 GARG & ASSOCIATES
 CA.No.-07/20498

S. NO.	Description
2	DRAINAGE SYSTEM
2.1	Providing, fixing, jointing and testing in position ISI marked (IS:4985) UPVC pipes for soil, waste and vent pipe min 9 Kg/ Sqcm rating with all neccessary specials and fittings (confirming to IS:7834) for waste pipe from fixtures to floor trap including reduces, enlarger, socket, couplers, bends, tees etc including fixing at wall/ ceiling level supported by clamp & hangers etc. cutting holes in wall/ floors/ slabs and making good the same with cement concrete 1:2:4 complete as required. (For Basement)
2.1.1	110 mm dia
2.1.2	160 mm dia
2.2	Providing, fixing, jointing and testing in position ISI marked (IS:4985) UPVC pipes for rain water min 9 Kg/ Sqcm rating with all neccessary specials and fittings (confirming to IS:7834) for waste pipe from fixtures to floor trap including reduces, enlarger, socket, couplers, bends, tees etc including fixing at wall/ ceiling level supported by clamp & hangers etc. cutting holes in wall/ floors/ slabs and making good the same with cement concrete 1:2:4 complete as required. (For Basement)
2.2.1	90 mm dia
2.2.2	110 mm dia
2.2.3	160 mm dia
2.2.4	200 mm dia
2.3	Making Drain with concrete with all finishing of required size as shown in drawing complete with DI frame and cover fixed in concrete and painted with two coats of enamel paint over a coat of primer.

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
INTERNAL ELECTRICAL WORKS FOR BASEMENT	
SCHEDULE D1D	
Sl. No.	DESCRIPTION
1.0	SUB HEAD-I:INTERNAL WIRING
	Point wiring in PVC conduit, with modular type switch :-
1.1	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.
a	Group B
1.2	Rewiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed heavy class PVC conduit,and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.
a	Group B
	Twin Control Point wiring in PVC conduit, with modular type switch :-
1.3	Rewiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, 2 way modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.
	Power plug wiring in PVC conduit (2 x 4 Sq.Mm.) :-
1.4	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class pvc conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.
	Circuit / Sub main wiring in PVC conduit :-
1.5	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed heavy class pvc conduit as required.
a	2 X 10 sq. mm + 1 X 6 sq. mm earth wire
1.6	Wiring including termination for the first light points controlled by MCB in distribution board (Cost of MCB taken seperately) with 2x1.5 sq.mm. PVC insulated copper conductor FRLS wires of 1100 Volts grade in concealed/exposed PVC conduits and 2.5 sqmm. earth wire.
1.7	Same as above but LOOP POINT i.e. wiring of point looped from first point with 2x1.5 sq.mm. PVC insulated copper conductor FRLS wire of 1100 volt grade in concealed/exposed PVC conduits and 2.5 sqmm earth wire
	S/F light plug point modular type accessories :-
1.8	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.
	S/F power plug point modular type accessories :-
1.9	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.

Sl. No.	DESCRIPTION
1.10	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 amp modular socket outlet and 25A modular SP MCB, "C" curve including connection, painting etc. as required.
1.11	Supplying and fixing 20 A, 240 V, SPN Industrial type socket outlet, with 2 pole and earth, metal enclosed plug top along with 20 A "C" curve, SP, MCB, in sheet steel enclosure, on surface or in recess, with chained metal cover for the socket outlet and complete with connections, testing and commissioning etc. as required.
	S/F modular type electronic fan regulator :-
1.12	Supply and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.
	S/F modular type blanking plate :-
1.13	Supply and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.
2.0	SUB HEAD-II: DISTRIBUTION BOARDS & MCB's : All DBs shall be Fire resistant.
2.1	Supplying and fixing 5 amps. to 32 amps. rating, 240 volts 'C' series, miniature circuit breaker (MCB) suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.
a	Single pole
2.2	Supplying & fixing single pole, blanking plate in the existing MCB DB complete etc. as required.
2.3	Supplying and fixing following rating, double pole , 240 volts, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.
a	63 amps.
2.4	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.
a	63 amps.
2.5	Supplying and fixing following way, Fire Resistant, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)
a	16 way, Double door
2.6	Supplying and fixing following way, Fire resistant, horizontal type TP&N, sheet steel MCB distribution board , 415 V on surface /recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required (But without MCB / RCCB / Isolators).
a	4 way (4 + 12), Double door
3.0	SUB HEAD-III: CONDUITING AND CABLING:
	S/F MODULAR BOXES, BASE & COVER PLATE :-
3.1	Supplying and fixing following size / modules, GI box along with modular base & cover plate for modular switches in recess etc as required
a	1 Module or 2 Module (75 mm x 75 mm)
b	3 Module (100 mm x 75 mm)
c	4 Module (125 mm x 75 mm)
d	6 Module (200 mm x 75 mm)
e	8 Module (125 mm x 125 mm)
f	12 Module (200 mm x 150 mm)

Sl. No.	DESCRIPTION
3.2	Supplying and fixing following Modular Base & cover plate on existing modular metal box etc as required.
a	1 Module or 2 Module
b	3 Module
c	4 Module
d	6 Module
e	8 Module
f	12 Module
	S/F MODULAR TYPE SWITCH / SOCKET :-
3.3	Supplying and fixing following modular switch/ socket on modular base, cover plate & switch box including connections etc. as required.
a	5/6 A Switch
b	15/16/25 A Switch
c	3 pin 5/6 A Socket outlet
d	6 pin 15/16 A Socket outlet
e	
3.4	Supply and fixing of following sizes of heavy class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required :
a	20 mm.
b	25 mm.
c	32 mm.
3.5	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.
a	25 mm.
b	32 mm.
4.0	SUB HEAD-IV:INTERNAL LIGHTING FIXTURES & FANS
	SUPPLY OF LIGHTING FIXTURES
4.1	Supply of surface, wall / ceiling mounting LED T5 / T8 Tube Light fixture having Powder coated die cast aluminium housing with heat sink, PF above 0.9, efficacy above 90 lm/watt, pre wired with constant current LED driver set, suitable for 1 phase, 240 V, 50 Hz, IP 20 complete in all respects. (colour temperature 3000oK / 4000oK / 6500oK - to be confirmed before supply)
a	1x22 watt LED T5 / T8 Tube Light fixture (1200 mm long)
b	2x22 watt LED T5 / T8 Tube Light fixture (1200 mm long)
4.2	Supply of recess / surface, round / square, ceiling mounting LED Light fixture having Powder coated die cast aluminium housing with heat sink, glare free diffuser with uniform light distribution, PF above 0.9, efficacy above 90 lm/watt, pre wired with constant current LED driver set, suitable for 1 phase, 240 V, 50 Hz, IP 20 complete in all respects. (colour temperature 3000oK / 4000oK / 6500oK - to be confirmed before supply)
a	18 watt LED DOWN LIGHT
4.3	Supply of surface mounted bulk head fixtures with LED lamp complete as per standard item with copper wiring lamps as required as per the standard catalogue item.
a	9 watt LED Bulk Head
	LIGHT FIXTURES & FAN
	All the lighting fixtures and fans samples must be gotten approved from the Owner/ Architect/ PMC before ordering on the Sub-vendor and before supply.
	All the ceiling fans shall be complete with down rods of required length. The colour and shade of fans shall be gotten approved by the Owner / Architect / PMC.
	All Exhaust fans shall be complete with frames, colour and shade shall be gotten approved from Owner / Architect / PMC.

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
FIREFIGHTING FOR BASEMENT	
SCHEDULE D1E	
S. NO.	DESCRIPTION
A.	FIRE PUMP & EQUIPMENT
1.0	Supplying, Installation, Testing and Commissioning of Factory Assembled electrically driven horizontal split case centrifugal Main fire hydrant / sprinkler Fire pump , suitable for automatic / manual operation, consisting of the following:
a.	Horizontal split case , centrifugal pump, suitable for operation on 415 volts \pm 10 %, 3 phase, 50 HZ A.C supply. The installation shall be complete with flexible coupling and coupling guard as required. Fire pump shall have C.I. casing, CS diffusers, bronze impeller (hard finished and dynamically balanced) and S.S. (304) Shaft with factory fitted mechanical seal . The installation shall be complete with necessary pressure gauge with gun metal shut off cock on delivery side. The Pump Set (Pump + Motor duly aligned) shall be Inspected for bench mark at Pump Manufacturer Facility by Client and shall be gotten approved by the Local fire Authority}.
	Pump shall be capable of 150% of rated capacity at a head of 65% of the rated head. The shut off head should not exceed 120% of rated head.
b.	Squirrel cage induction motor, suitable for operation on 415 volts, 3 phase 50 HZ A.C supply, for the above pump conforming to IP 55 protection & class F insulation. The motor shall conform to IS 325-1978 (up to date) with flexible coupling and coupling guard, complete as required.
c.	Common base plate for pump and motor from M.S. Channel for required size.
d.	Suitable RCC / cement concrete foundation with plaster and MS angle epoxy coated edging (design and drawing to be provided by the Contractor. Complete with anti-vibration arrangement of cushy foot mountings.
e.	The rate includes interconnecting cables, foundations & foundation bolts
	Pump capacity - 2850 LPM
	Head -110 m
	RPM - 1500
	Note: *The head of the pump is selected in a manner so as to give a minimum 3.5kgf/cm ² pressure at the highest/farthest point.
	Electrically driven pump described above (including all necessary /required accessories)
2.0	Supplying, Installation, Testing & Commissioning of Factory Assembled horizontal split case, centrifugal diesel engine driven fire pump , suitable for automatic / manual operation, consisting of the following:
a.	Horizontal split case , centrifugal pump, suitable for operation on 415 volts \pm 10 %, 3 phase, 50 HZ A.C supply. The installation shall be complete with flexible coupling and coupling guard as required. Fire pump shall have C.I. casing, CS diffusers, bronze impeller (hard finished and dynamically balanced) and S.S. (304) Shaft with factory fitted mechanical seal. The installation shall be complete with necessary pressure gauge with gun metal shut off cock on delivery side. The Pump Set (Pump + Motor duly aligned) shall be Inspected for bench mark at Pump Manufacturer Facility by Client and shall be gotten approved by the Local fire Authority}.
	Pump shall be capable of furnishing 150% of rated capacity at a head of 65% of the rated head. The shut off head shall not exceed 120% of rated head.
b.	Radiator Cooled Diesel engine with automatic / manual starting mechanism and other accessories with fuel tank (fabricated from 3mm MS sheet, painted with two coats of synthetic enamel paint over a coat of primer) of capacity for 4 hours continuous working. The tank shall be fitted with Magnetic oil level indicator, MH with cover, drain valve, air vent including structural supports (painted with approved shade), 2 Nos. x 12 volt battery, & fittings, flexible coupling, coupling guard & exhaust pipe connection complete as required.

c.	Common base plate for pump and motor from M.S. channel of required size.
d.	Suitable cement concrete foundation with plaster and MS angle epoxy coated edging complete with antivibration arrangement of cushy foot mountings.
e.	The rate includes interconnecting cables, foundations & foundation bolts
	Pump capacity -2850 LPM
	Head - 110 m
	RPM - 1500
	Diesel driven pump described above (including all necessary /required accessories)
3.0	Supplying, installation, testing and commissioning of factory assembled jockey pumps suitable for automatic/manual operation consisting of the following:
a.	Vertical Multistage centrifugal pump, suitable for operation on 415 volts \pm 6%, 3 phase, 50 HZ A.C supply. The installation shall be complete with Flexible coupling and coupling guard, complete as required.
	The pump shall be complete in S.S 316L. The pump shall be provided with factory fitted mechanical seal. The system shall be complete with necessary pressure gauge with gun metal shut off cock on delivery side.
b.	Squirrel cage TEFC induction motor TEFC type for operation on 415 V, 3 phase 50 HZ AC supply for the above pump with flexible coupling and coupling guard etc. as required.
c.	Common base plate for pump and motor from M.S. channel as required size.
d.	Suitable cement concrete foundation with plaster and MS angle epoxy coated edging, complete with Antivibration arrangement of cushy foot mounting.
e.	The rate includes interconnecting cables, foundations & foundation bolts
	For pump defined above & of duty as follows :
	Jockey Pump-1 for Sprinkler System & Hydrant System
	Capacity -180 LPM
	Head -110 m
	RPM - 2900
	Jockey pump described above (including all necessary/required accessories)
4.0	Supply, installation, testing and commissioning of factory assembled electrically driven high pressure centrifugal water curtain fire pump , suitable for automatic operation consisting of the following:
a.	Horizontal end suction , centrifugal pump, suitable for operation on 415 volts \pm 10 %, 3 phase, 50 HZ A.C supply. The installation shall be complete with flexible coupling and coupling guard as required. Fire pump shall have C.I. casing, CS diffusers, bronze impeller (hard finished and dynamically balanced) and S.S. (304) Shaft with factory fitted mechanical seal. The installation shall be complete with necessary pressure gauge with gun metal shut off cock on delivery side. (The pump should be tested for bench mark at Pump Manufacturer facility by Client and shall be gotten approved by the Local fire Authority).
	Pump shall be capable of furnishing not less than 150% of rated capacity at a head of not less than 65% of the rated head. The shut off head shall not exceed 120% of rated head.
b.	Squirrel cage induction motor, TEFC type suitable for operation on 415 volts, 3 phase 50 HZ A.C supply, for the above pump with synchronous speed of 2900 RPM, conforming to IP 55 protection & class F insulation. The motor shall conform to IS 325-1978 (up to date) with flexible coupling and coupling guard, complete as required.
c.	Common base plate for pump and motor from M.S. Channel for required size.
d.	Suitable cement concrete foundation with cement concrete plaster (design and drawing to be provided by the Contractor while the foundation will be done by others) complete with anti-vibration arrangement of cushy foot mountings.
e.	The rate includes interconnecting cables, foundations & foundation bolts
	Pump capacity -2280 LPM
	Head - 45 m
	RPM - 2900
	Water curtain fire pump described above (including all necessary /required accessories)

5.0	Supply, installation, testing and commissioning of Pressure switch of approved make for Hydrant pump, Sprinkler pump, jockey pumps, Diesel Engine Driven pump and Fire water curtain Pump including necessary wiring and cut off valve up to central panel & other material as described in specifications.
6.0	Providing and fixing double flanged vertical air vessel fabricated from 10mm M.S. plate with dished ends from 10mm M.S. plate, outside with one coat of primer and two coats of synthetic enamel paint of approved shade, complete with approved quality of pressure switches, pressure gauge and all other required accessories to operate commonly main fire pump, sprinkler pump and Jockey pump at drop of pressure, automatically at required pressure setting (pressure sketch to be issued separately); Recommended dia. : 450mm Height of shell : 2000mm Working pressure : 10 Kg/Sq.cm Test Pressure : 15Kg/Sq.cm
7.0	Providing, fixing, testing and commissioning of heavy class MS pipe , IS : 1239 marked with all necessary fittings like tees, elbows, flanges, reducers, gaskets, nuts and bolts etc. welded or screwed joints as required including fixing the pipe with necessary structural supports including painting of two coats of synthetic enamel paint over two coats of red oxide primer including all civil breakages and making good the same (Location: Plant room).
a.	65 mm dia
b.	80 mm dia
c.	100 mm dia
d.	150 mm dia
8.0	Providing, fixing, testing & commissioning of heavy class MS pipe , IS : 3589 marked with all necessary fittings like tees, elbows, flanges, reducers, gaskets, nuts and bolts etc. welded or screwed joints as required including fixing the pipe with necessary structural supports (for delivery/suction manifold relating to the pumps) including painting of two coats of synthetic enamel paint over two coats of red oxide primer including all civil breakages and making good the same [Location : Plant room].
a.	200 mm dia (6 mm thick) with necessary supports etc. as required.
b.	250 mm dia (6 mm thick) with necessary supports etc. as required.
9.0	Providing & fixing BUTTERFLY VALVE (MANUAL) with C I body SS disc nitrile sheet & O - ring & PN 16 pressure rating as specified.
a.	250 mm dia (Gear operated)
b.	200 mm dia (Gear operated)
c.	150 mm dia
d.	100 mm dia
e.	80 mm dia
f.	65 mm dia
10.0	Providing & fixing NON - RETURN VALVE with dual plate of C I body SS plates vulcanized NBR seal flanged end & PN 16 pressure rating as specified.
a.	200 mm dia
b.	150 mm dia
c.	100 mm dia
d.	80 mm dia
11.0	Providing & fixing C.I. 'Y' Strainer (screwed/ flanged) with stainless steel fine wire mesh perforated sheet basket with necessary flange/ unions nuts, bolts and washers complete as required (on pump suction).
a.	200 mm
b.	150 mm
c.	80 mm

12.0	Providing and fixing heavy duty floating flange EPDM rubber expansion joint with unit control (tie rod & gusset plate) as per manufacturers specifications of standard length complete with all accessories and a working pressure not less than 16 Kg./sqcm including rubber gaskets, flanges, nuts, bolts & washers complete as required.
a.	65 mm dia
b.	80 mm dia
c.	100 mm dia
d.	150 mm dia
e.	200 mm dia
13.0	Providing & Fixing of burden type Stainless Steel dial type pressure gauge with brass isolation valve and pipe. (In Pump Room)
	Dial Diameter : 100 mm
	Caliberation : 0-15 Kg/cm ²
14.0	Providing & Fixing testing & commissioning of installtion control valve of cast iron body and brass/bronze working parts comprising of water motor alarm. Bronze seat clapper, and clapper arm, hydraulically driven mechanical gong bell to sound continuous alarm when the Wet riser/ sprinkler System activates, pressure gauges, emergency release, strainer, pressure switch, cock valve complete with drain valve and bypass, test control box, ball valves, MS pipe of required sizem flanges, orifice plate, gasket etc. of size 150mm dia as required.
a.	150 mm dia
15.0	Providing and fixing exhaust, Diesel engine driven pump exhaust M. S. pipe class 'B' of suitable dia (100mm dia) for the engine including fitting like flanges, bends, reducers, etc. The pipe shall be provided with 12 mm thick supercera ceramic fibre rope, 21 gauge, necessary excavation, fixing of silencer connections at engine exhaust, necessary supports, back filling, cutting and making good, bird proof and weather proof flap complete in all respect as directed.
	<i>Note: Contractor shall include in his rates for providing level controllers, pressure switches, wiring, cabling from level controller / pressure switch to panel etc. complete as required to operate the system automatic/manual. Pump shall be protected against running dry.</i>
	<u>Note: All valves shall be of minimum 16 Kg/sq.cm working pressure</u>
B.	FIRE HYDRANT SYSTEM
1.0	Providing, laying, jointing, testing and commissioning of following sizes of MS 'C' Class (Heavy duty) pipes conforming to IS-1239 with all accessories like orifice plate(of required dia), all fittings (standard MS fitting with welded joint shall be used on the pipes) including tees, elbows, reducers, union, flanges, rubber gaskets, GI nuts bolts, washer including supporting/fixing the pipe on floor / wall /ceiling with clamps, hangers (using anchor fastners) as per specification. G.I. pipe sleeve of suitable higher size shall be provided wherever the pipes are crossing the walls/floors and sealing the sleeves with glass wool in between & fire sealent compound at either end all as per Project Manager's / Consultants requirements including cutting holes and chases in brick, RCC work and making good the same to original conditions complete in all respects. All hangers, clamps, brackets etc. shall be of galvanized iron unless specified otherwire and then supply of the same shall also be included for rates under this head.
	Welding of any kind on the galvanized support / hanger shall not be permitted including synthetic enamel paint of approved shade over a coat of zinc primer.
	Note: Pipe upto 50 mm dia shall be threaded joints, above 50 mm shall be welded joints.
a.	25 mm dia
b.	80 mm dia
c.	100 mm dia
d.	150 mm dia

2.0	Providing two coats of synthetic enamel paint of approved shade over a coat of primer. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. Including painting of legends both direction arrow as per the approval of the Project Manager.
a.	25 mm dia
b.	80 mm dia
c.	100 mm dia
d.	150 mm dia
3.0	Providing and fixing M.S. structural work fabricated from standard sections, (MS rounds, angles, channels etc.) including cutting to size, drilling, welding, including cost of fasteners, clamps in RCC structural members as directed, including two or more coats of synthetic paint over one coat of primer after surface preparation including cutting and making good walls.
4.0	Providing & fixing Stainless Steel fire hydrant single headed landing valve with 80 NB flanged inlet, brass spindle controlled 63 mm dia female instantaneous outlet type coupling, blank cap, chain, twist release type lug & all accessories. Conforming to IS standard. Including fixing with anchor fastener and flanged tapping from wet riser and providing pressure gauge with gun metal ball valve complete as required.
5.0	Providing and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :
	Stainless Steel (Grade 304)
6.0	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :
	Stainless Steel (Grade 304)
7.0	Providing & Fixing of standard Fireman's Axe with heavy insulated handle.
8.0	Providing & Fixing of wall mounting swinging type first aid fire hose reel with drum, hanging bracket, 36.5 Mtr. length x 20 mm dia high pressure hose reel tubing as per IS: 444 with gun metal (GM) shut off nozzle having 5 mm dia orifice. The hose reel shall be conforming to IS : 884-1985. Rate shall include 25 mm dia M.S. pipe connection from Riser to hose reel, sockets, nipples, elbows and ball valve (25 mm dia). Drum shall be fixed on adjoining wall through anchor fasteners / cement concrete block as and when required. (For internal hydrant system).
9.0	Providing & fixing fire authority approved powder coated Aluminum door frame and shutter (size as per drawings) frame capable of accommodating fire hose reel, fire hydrant, hose pipe, fittings & accessories. The box shall have a single or double glazed front glass door (with 5 mm thick glass) with lock & key arrangement & shall be Powder coated with Fire red as per IS:5, shade no. 536. (For Internal Hydrant)
10.0	Providing and fixing standard fire hose cabinet (900 / 1000 / 1200 mm x 2000 mm x 450 / 600 mm) indoor type suitable for accomodating internal hydrant, hose reel made of not less than 16 SWG MS sheet having full fronted glass hinged door (5 mm thick glass) including necessary locking arrangement with handle for housing two nos. 15 meter long fire hose pipes, 30 meter long hose reel, branch pipe and hydrant valve as required as per drawings, including brackets for mounting accessories, painting (one coat primer and two coat of fire red colour). The cabinet shall be mounted on suitable raised platform. The words " FIRE HOSE " to be painted on the box.
11.0	Providing and fixing ball valve (brass) of approved quality complete. (High or low pressure with plastic floats).
a	25 mm nominal bore

12.0	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :.
a.	80 MM NB
b.	100 MM NB
c.	150 MM NB
13.0	Providing, installation, testing and commissioning of non-return valve of following sizes confirming to IS: 5312 complete with rubber gasket, GI bolts, nuts, washers etc.as required :
a.	65 mm dia
b.	150 mm dia
14.0	Providing & fixing 25 mm dia air release valve with forged brass body full way ball valve type isolating valve, flanges / union, suitable for sprinkler / wet riser / down comer system with all necessary connections complete in all respects.
15.0	Supplying and fixing orifice plate made out of 6 mm thick stainless steel(Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/sq.cm complete as required.
16.0	Providing and fixing weather proof hose cabinets for yard hydrant fabricated from 16 g MS sheet with full glass door and locking arrangement, suitable to accommodate one hydrant valve, 2 nos.15m long hose and 1 No branch pipe. The cabinet shall be painted with one coat of primer and finished stove enamelled "Fire Red", "Fire Hose" written on front including suitably mounted on a raised masonry platform as required. (Approx 0.75m x 0.6m x 0.25m).
17.0	Supplying and fixing fire brigade inlet connection of cast iron body with 4 nos. Stainless steel male instantaneous inlet couplings complete with cap and chain as required for 150mm dia MS pipe connection, conforming to IS 904 as required.
a	4 way-100 mm dia M.S Pipe
18.0	Providing,fixing,testing and commissioning of one number Stainless steel fire brigade section hose coupling (Fire brigade withdrawal connection) i/c foot valve in the bottom etc. as per specification complete as required. (M.S pipe of 100 mm dia will be paid in pipe item.
19.0	Providing and fixing fire hose cabinet fabricated from 16 gauge M.S. Sheet with single or double glazed front door (with 4 mm thick glass) and locking arrangement, painted fire red with stove enamelled paint "FIRE HOSE" written on front including necessary supports approximate size.
a	1200x730x2100
	<u>Note: All valves shall be of minimum 16 Kg/sq.cm working pressure</u>
C.	SPRINKLER, PIPING & ACCESSORIES
1.0	Providing, laying, jointing, testing and commissioning of following sizes of MS 'C' Class (Heavy duty) pipes conforming to IS-1239 with all accessories like orifice plate(of required dia), all fittings (standard MS fitting with welded joint shall be used on the pipes) including tees, elbows, reducers, union, flanges, rubber gaskets, GI nuts bolts, washer including supporting/fixing the pipe on floor / wall /ceiling with clamps, hangers (using anchor fastners) as per specification. G.I. pipe sleeve of suitable higher size shall be provided wherever the pipes are crossing the walls/floors and sealing the sleeves with glass wool in between & fire sealant compound at either end all as per Project Manager's / Consultants requirements including cutting holes and chases in brick, RCC work and making good the same to original conditions complete in all respects. All hangers, clamps, brackets etc. shall be of galvanized iron unless specified otherwise and then supply of the same shall also be included for rates under this head.

	Welding of any kind on the galvanized support / hanger shall not be permitted including synthetic enamel paint of approved shade over a coat of zinc primer.
	Note: Pipe upto 50 mm dia shall be threaded joints, above 50 mm shall be welded joints.
	For Sprinkler system - MS `C' Heavy class pipe
a.	25 mm dia
b.	32 mm dia
c.	40 mm dia
d.	50 mm dia
e.	65 mm dia
f.	80 mm dia
g.	100 mm dia
h.	150 mm dia
2.0	Providing two coats of synthetic enamel paint of approved shade over a coat of primer. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. Including painting of legends both direction arrow as per the approval of the Project Manager.
a.	25 mm dia
b.	32 mm dia
c.	40 mm dia
d.	50 mm dia
e.	65 mm dia
f.	80 mm dia
g.	100 mm dia
h.	150 mm dia
3.0	Supplying, installation, testing & commissioning of sprinkler flexible pipe (UL Listed) of stainless steel complete with 15 NPT on reducer thread with maximum working pressure of 175 PSI test pressure of 875 PSI (Burst) with branch line (Inlet) 25mm NPT male thread to sprinkler head (Outlet) 15mm NPT female thread with reducer, nipple, 2 side brackets, center bracket, stockbar of following sizes complete as required.
a	1200 mm length
4.0	Providing, fixing, testing and commissioning of 15 mm dia quartzoid bulb type GM sprinkler head suitable to operate at 68°C suitable for sustaining the pressure on the seat & water hammer effect. (UL/FM listed/approved)
a.	Standard Pendant/ Upright/sidewall
5.0	Providing, fixing, testing and commissioning of S.S. Disc motorized butterfly valve of following dia for water curtain system complete in all respects with accessories.
a	150 mm dia
b	100 mm dia
c	80 mm dia
d	65 mm dia
6.0	Providing and fixing of UL/FM listed/approved electrically operated flow indicating switch of following diameter with threaded connection for a minimum flow of 90 lpm in Sprinkler branch line on each floor with flexible full bore paddle & NO/NC contact terminals as specified complete with all accessories and necessary wiring.
a.	150 mm dia
b	80 mm dia
c	65 mm dia

7.0	Providing, installation, testing and commissioning of non-return valve of PN 1.6 with following sizes confirming to IS: 5312 complete with rubber gasket, GI bolts, nuts, washers etc. as required. (Make: zoloto)
a	150 mm Dia
b	100 mm dia
8.0	Providing and fixing 50 mm dia inspection & testing assembly with Ball valve (3 Nos), gun metal sight glass, by pass valve & connected to drain pipe.
9.0	Providing and fixing hydraulically operated deluge valve (For Water curtain)(UL, FM approved) with complete with strainer, emergency release station, pressure gauge and other accessories complete as required for proper functioning of the deluge valve. The deluge valve shall be double interlocked and will get the signal from fire detection panel as well as sprinkler system simultaneously to operate.
a.	150 mm dia
8.0	Providing, installation, testing & commissioning of water curtain nozzle 15mm dia nickel chrome plated brass, BSPT, K-factor as per design consideration complete as required.
9.0	Providing & Fixing of burden type Stainless Steel dial type pressure gauge with brass isolation valve and pipe. (At each Sprinkler tap off - before flow switch)
	Dial Diameter : 100 mm
	Calibration : 0-10 Kg/cm ²
10.0	Providing, fixing, testing & commissioning of 50 mm diameter single lever inspectors testing assembly complete in all respects.
11.0	Providing, Fixing, testing, installing and commissioning of UL approved Pressure Reducing valve on sprinkler riser of 150mm dia (Location : As per schematic)
12.0	Providing and fixing intelligent-type Sprinkler Annunciation Panel for minimum 99 Zones (62 working + 28 zones spare), compatible for seamless integration with waterflow devices, monitor & control modules and BMS systems (programmable outputs), with LCD type display & LED indication for all zones, complete with internal sounder, alarm/fault indications & standby 24v lead acid batteries with charger.
13.0	Providing and Fixing chrome plated twin sliding rosette assembly (2 piece recessed escutcheon plate), adjustable 1/2", UL Listed / FM Approved, suitable for 15 mm size sprinklers.
14.0	Providing and fixing electrical Monitor Modules to monitor the waterflow devices/flowswitches with built-in identification system indicating switches/waterflow detectors of 15-32v DC operating voltage to be installed as per manufacturer specifications in an accessible location as per site, complete, excluding wiring to Annunciation Panel, with UL/CE/LPCB approval.
15.0	Providing and fixing electrical Fault-isolation Modules to protect the system against wire to wire short circuits on loops, to be installed at the rate of every 6 nos. monitor modules complete as per manufacturer specifications and in an accessible location as per site, excluding wiring to Annunciation Panel, with UL/CE/LPCB approval.
	<u>Note: All valves shall be of PN10 rating</u>
D.	PORTABLE FIRE EXTINGUISHERS
1.0	Providing & fixing of ISI marked (IS:15683) portable fire extinguisher, carbondioxide type flat base including valve, discharge hose of not less than 10 mm dia. 1 M long & complete in all respects including initial fill with CO ₂ gas confirming to IS:307-1966 filled to a filling ratio of not more than 0.667 of not more than 0.667 and wall suspension bracket
a)	Capacity 4.5 kg

2.0	6 Kg. ABC Powder type fire extinguishers are manufactured and marked to Indian standard IS: 15683. Suitable first aid appliance for fighting fires in Class A, B & C fire that is wood, textile, flammable liquids & gases.
3.0	Providing and fixing ceiling mounted type modular automatic extinguishing system with ABC Powder, to be installed at the ceiling level with proper supporting arrangements, complete with required gas cartridge tested to a pressure of 30 kgf/cm ² all necessary actuation devices. (For Electrical room/UPS Room)
a	5 Kgs Capacity
b	2 Kgs Capacity
4.0	Providing & fixing of IS marked (IS: 15683) mechanical foam type fire extinguishers 50 Ltr. consisting of welded M.S. trolley mounted cylindrical body, squeeze lever discharge valve fitted with pressure discharge hose, discharge nozzle, trolley etc. finished externally with red enamel paint and fixed to wall with brackets complete with internal charges
5.0	Providing and fixing of carbon-di-oxide fire extinguishers (22.5 kg) trolley mounted with all accessories internal discharge tube, high pressure discharge hose, discharge nozzle, ISI marked as per IS:2878 finished externally with red enamel paint and fixed to wall with brackets complete with internal charge - For LT Panel Room, Electrical Rooms, Plant Room, Pump Room, DG Set, Substation Area etc.
E.	ELECTRICAL INSTALLATION FOR FIRE FIGHTING SYSTEM
1.0	Fabrication, supply, Installation testing & commissioning of Electrical control panel of cubical construction, floor mounted type, fabricated out of 2mm thick CRCA sheet, compartmentalised with hinged lockable doors, dust and vermin proof, powder coated of approved shade after 7 tank treatment process, cable alley, interconnection with suitable size copper conductor cable/solid copper strip, having switchgears and accessories, mountings and internal wiring, earth terminals, numbering etc. complete in all respect, suitable for main fire pump, pressurisation pump & diesel pump set complete as per CPWD specification with following in coming and Outgoings, suitable for operation on 415V, 3 phase, 50Hz Ac Supply with enclosure protection class IP 42 as required :
	Incomer :
	630A, 50kA 4 Pole MCCB, Ics=100% Icu Rating Digital Voltmeter 0-500V with selector switch Ammeter (0-630 A) with selector switch & CTs etc. LED type RYB phase indicating lamps, ON, OFF, trip indicating lamps
	Bus Bar :
	Set of Copper Bus Bar 800A
	Outgoings :
	(Note : All outgoing feeders for pumps should have digital Ammeter with selector switches, and LED type ON, OFF, trip indicating lamps)
	Main Fire Pump
	200 Amp, 50kA TPN MCCB, Ics=100% Icu, with fully automatic Star/Delta starter suitable for 75 hp pump with overload protection, current sensing type single phase preventor complete with all accessories and internal wiring required for automatic operation, selector switch for local/remote, auto/manual/OFF operation. - 2 sets
	Jockey Pump
	100 Amp, 50kA TPN MCCB, Ics=100% Icu, with Suitable HP fully automatic Star/Delta starter with overload protection, current sensing type single phase preventor complete with all accessories and internal wiring required for automatic operation, selector switch for local/remote, auto/manual/OFF operation. - 2 sets

	Diesel Engine Control
	Control for diesel engine comprising - Automatic/Manual selector switch & 3 attempts starting device, timers and relays as required, push buttons, start/stop in manual mode Indicating lamp for high/ Low Lub. Oil pressure, High Water Temp and Engine on indication. Battery charger suitable for 12V/24 V DC with boost and trickle selector switch, 0-30 V DC volt meter, and 0- 20 A DC Ammeter All standard relays and accessories for automatic operation of diesel engine System Controller Designing, Supply, Installation, Testing and commissioning of system controller to control operation of main electric fire pump, diesel pump, Pressurization pump, Terrace pump in sequence as per specification consisting of relays, timers. Sensors, annunciation window for fault indication, complete as per specification
	Water Curtain Pump
	Star-Delta Starter comprising the following (for water curtain Pump):
	For 50 HP. (1 Nos.) (Hydrant Pump)
	Type-2 Co-ordination
	1 No. suitable rated TP MCCB, 35 KA, (Motor duty only magnetic / microprocessor based motor duty if above 250A).
	Suitable sized 3P Contactors (Star, Delta & Run contactors) with 2 NO & 2 NC Auxiliary contacts
	Star-Delta Timer
	Suitable Electronic O/L motor protection relay with inbuilt SPP
	ON/OFF / Trip indication lamps (110V) (LED Type)
	ON/OFF Push buttons
	2 Pole A/M Selector switch for BMS application
	Suitable rated cast resin CT's for metering on each phase, of Class-1 accuracy and of suitable burden & ratio
	Digital ammeter with inbuilt selector switch
	ON/OFF-Trip / A/M potential free contacts for BMS
	Control wiring for linking with pressure switch for auto operation.
	Fire Pump Panel as described above.
2	Providing and laying of ISI marked Aluminium conductor, XLPE insulated, armoured, served, sheathed Cable 1100 V grade with terminal joints by palm or pin type cable sockets (lugs), insulating with tapes, double compression type brass and nickel plated compression glands. On surface, the cable run shall be on MS cable tray or fixed on M.S. clamps etc. of suitable size or as directed by engineer-in-charge, complete in all respects. In ground the cable shall be laid at a depth of 750 mm from ground Level including a cushion of 75 mm thick. Fine river sand around, duly protected by bricks on sides and top including excavation and back filling of soil or laid in RCC hume pipe as called for. The armouring shall be properly connected with the earth conductor by clamps etc.
2.1	4 core 10 sq.mm.

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCHEDULE D2A	
SCOPE OF WORK	
FOR CIVIL WORKS FOR RESIDENTIAL BLOCKS	
SR. NO.	DESCRIPTION
1.0	EARTHWORK FOR TOWERS- Included in Scope of work for Basement
2.0	DE-WATERING FOR TOWERS- Included in Scope of work for Basement
3.0	CONCRETE WORK
3.1	Providing and laying in position cement concrete of specified grade, including the cost of centering and shuttering. All work above plinth level.
a	1:3:6 (1 cement : 3 coarse sand :6 graded stone aggregate 40 mm nominal size).
b	1:4:8 (1 cement : 4 coarse sand :8 graded stone aggregate 40 mm nominal size).
3.2	Providing and laying cement concrete in string or lacing courses, parapets, copings, bed blocks, anchor blocks, plain window sills, fillets etc. at all floors, including the cost of centering, shuttering and finishing.
a	1:2:4 (1 cement: 2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size)
3.3	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement :2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size) including providing and mixing water proofing material in cement concrete work @ 1 Kg per 50 kg of cement with Bitumen coating.
4.0	REINFORCED CEMENT CONCRETE WORK
	Note: No additional payment will be made for a richer mix of column spread into beam/slab during casting.
	All form work upto First Floor Level shall be in conventional Plywood/wooden shuttering thereafter Only Aluminium Shuttering shall be used. The Aluminium shuttering for both the blocks shall be prepared separately to complete the project on time.
	Any Honeycombing in RCC walls/Roof shall be repaired as per the recommendation of Structural Consultant.
4.1	Providing and laying Self Compacting Concrete in position machine batched, machine mixed and machine vibrated Design mix cement concrete of M-25 grade for reinforced cement concrete structural elements including the cost of Aluminium centering & shuttering, finishing and admixtures in recommended proportions (as per IS: 9103) to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per directions of CGEWHO/Architect/PMC. (Minimum Cement content for M-25 shall be @ 330 kg/cum)
a)	All works upto plinth level including Raft foundation, isolated/combined footings, Columns, retaining walls, staircase, plinth beams , slab & beams etc including all other possible locations.
b)	All work in superstructure (any thickness) in all shapes, sizes , heights and levels
i	Walls, columns, pillars, posts and struts
ii	Beams, plinth beams, girders, bressumers, cantilevers, suspended floors, sunshades, lintels, roofs and folded steps & risers, staircases including spiral staircases, shelves, fins and pergola beams and planters etc.
4.2	Providing and fixing of customized Aluminium form work for monolithic construction on RCC members with repetitive usage made up of aluminium sheets/plates of minimum 4mm thickness and grade 6061 (Type-6). The formwork comprises of (a) wall panel, rocker, kicker and internal soffit corner, external soffit corner, external corner, internal corner etc., (b) beam components i.e, beam side panel prop head for soffit beam, beams soffit panel, beam soffit bulk head and (c) deck components i.e. deck panel, deck prop, prop length, deck mid, soffit length, deck beam bar. The panels are held in position by a simple pin and wedge system that passes through holes in the out side rib of each panel. The tolerance of finished panel shall not be less than (-1 mm) and shall conform to IS 14987-1999. Pins and wedges to be made of high grade hot dipped galvansied mild steel.

SR. NO.	DESCRIPTION
	This form work also comprises of M.S. angle iron, "Z" shaped brackets braced diagonally at 0.90 to 1.00 mtr. centre to centre on external wall face just the level below on which to lay M.S. square tube panels (Challis) and guard railing supports to form working platform and 40 mm dia G.I. telescopic adjustable props to support deck formwork and beam soffit panels including de-shuttering the formwork from odd/even level to be shifted/lifted to next alterante odd/even level before which the points and shuttering surface to be thoroughly cleaned, pins greasing and shuttering surface oiling propoerly before fixing all complete including sealing of gap between kicker plates of wall panel and floors (if any) as per design of formwork as provided by shuttering supplier and as per direction of the Engineer-in-charge including filling and finishing the holes of varied sizes and shapes (left by keys/pins of aluminium form work shuttering while de-shuttering) with GP-2 cementeous polymer compound mixed with water in ratio prescribed by manufacturer to form consistent workable dough for pushing it in the holes upto full depth of wall using appropriate tools and finishing smooth all complete as per directions of the Engineer-in-charge.
	The holes /sleeves/ cutouts/grooves for plumbing pipes, water supply pipes, AC pipes, Kitchen chimney exhaust pipes or any other cutouts shall be inclusive in the quoted price.
4.3	Add for providing richer mixes at all heights and levels.
a	Providing M-30 grade R.C.C. instead of M-25 grade R.C.C. (Minimum Cement content for M-30 shall be @ 340 kg/cum).
b	Providing M-35 grade concrete instead of M-25 grade R.C.C.(Minimum Cement content for M-35 shall be @ 350 kg/cum)
c	Providing M-40 grade concrete instead of M-25 grade R.C.C.(Minimum Cement content for M-40 shall be @ 360 kg/cum)
4.4	Providing, hoisting and fixing at all levels precast reinforced cement concrete in lintels exceeding 0.75 m clear span at all heights & floors including the cost of required centring and shuttering with 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size).
4.5	Reinforcement steel (Fe 500 D) for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete at all levels and in all R.C.C. items with 18 guage binding wire and cover blocks of specified thickness in CM (1:3) complete, as per drawings and specifications at all heights and levels.
a	Corrosion Resistant Steel (CRS) Thermo mechanically treated bars confirming to Fe-500D grade
4.6	Extra for additional height in centering,shuttering wherever required with adequate bracing, propping etc including cost of de-shuttering and de-centering at all levels, over a height of 3.5m for every additional height of 1 metre or part thereof.
a	Suspended floors, roofs, landings, beams and balconies.
4.7	Plaster drip coarse/groove in plastered surface or moulding to RCC projections.
4.8	Providing and placing Rebars of the following dia of Reinforcement including designing depth, drilling, fixing with spacified chemical as per the spacification of HILTI or equivalent including conducting the pull out test as per standard norms/IS code.The minimum depth of rebarring shall be 10d.
4.8.1	10 mm dia
4.8.2	12 mm dia
4.8.3	16 mm dia
4.8.4	20 mm dia
4.8.5	25 mm dia
4.9	Providing and applying NETOBOND chemical over the joint of existing concrete and new poured concrete before casting as per specification of the manufacturer.
5.0	BRICK MASONRY WORK
5.1	Brick work with common burnt clay FPS bricks of class designation 10 in foundation and plinth in cement mortar 1:6 (1 cement:6 coarse sand).
5.2	Brick work with common burnt clay FPS bricks of class designation 10 in cement mortar 1:6 (1 cement : 6 coarse sand) in superstructure above plinth level, upto any floor in all shapes and sizes as shown in drawings

SR. NO.	DESCRIPTION
5.3	Half brick masonry of common burnt clay FPS bricks of class designation 10 in cement mortar 1:4 (1 cement: 4 coarse sand) in superstructure above plinth level upto all floors and level including providing and placing 2 nos. 6 mm dia M.S. bars at every fourth course as shown in drawings.
6.0	WOOD WORK
	<u>Mango Wood Frame</u>
6.1	Providing and fixing factory made door/window frames in Mango wood in Single/double rebate frames of following sizes including 35x12mm wooden moulding of Mango wood all around the frame including synthetic enamel paint with two or more coats on new works including a coat of wood primer, one side flush with brick or block work/ column and fixed in position with M.S. hold fasts 40 x 5 mm and 300 mm long 3 nos. on each side or 100 mm long gun metal dash fastener in case of RCC column/solid CC block in 1:3:6, including grooves and making arrangement as shown on drawing, applying anti-termite paint on surfaces touching masonry or concrete etc. complete
a	90 mm x 65 mm for internal door frames in DU's (Frame and wall thickness shall be same)
6.2	<u>Teak wood frame</u>
	Providing & fixing wood work in frames of Main doors in Double Rebate including 35x12mm wooden moulding in second class Teak wood all around the frame including PU matt polishing with two or more coats on new works including a coat of wood filler, one side flush with brick or block work/ column and fixed in position with M.S. hold fasts 40 x 5 mm and 300 mm long 3 nos. on each side or 100 mm long gun metal dash fastener in case of RCC column or solid CC block in 1:3:6, including grooves and making arrangement as shown on drawing, applying anti-termite paint on surfaces touching masonry or concrete etc.
a	Second class Teak wood frame of size 130 mm x 65 mm for entrance door frames (Frame and wall thickness shall be same)
6.3	Providing and fixing 35 mm thick Teak Finish Pre laminated flush door shutter , decorative type conforming to IS: 2202 (Part 1), core of block board construction with frame of 1st class hard wood and well matched 3 ply commercial veneering on both faces of shutter and laminated with approved quality high pressure malamine /teak faced lamination 1.00mm thick, using phenol formal-dehide synthetic resin (conforming to B.W.P. Type specified in IS:848 1974) including 25 mm thick lipping of 2nd class teak wood glued & nailed all around complete, Pu matt polishing with 2 or more coats including a coat of wood filler, to give an even shade.
a	Main Door Shutter
6.4	Providing and fixing 35 mm thick Pre-Laminated flush door shutter , decorative type conforming to IS: 2202 (Part 1) , core of block board construction with frame of 1st class hard wood and well matched 3 ply commercial vennering on both faces of shutters and both side laminated with approved quality high pressure malamine faced lamination 1.00mm thick using phenol formal-dehide synthetic resin (conforming to B.W.P. Type specified in IS:848 1974) including 25 mm thick lipping of 2nd class teak wood glued & nailed all around complete, painting with 2 or more coats with spray synthetic enamel paint over a coat of wood primer to give an even shade.
a	Internal Doors
6.3	Providing and fixing Stainless Steel Security door Shutter with SS frame fixed in wooden door frame rebate and SS fly mesh shall consist average width of aperture 1.4 mm and nominal dia of wire 0.63 mm with its fixing arrangement by SS flats in main entrance door of each dwelling unit as per the sections, sizes etc. shown in drawing and specifications including fixing with heavy duty stainless steel 150 mm hinges (4 nos.), 300 mm SS aldrop (1 nos.),SS tower bolt 600 mm (1 nos.) as required, SS handles (2 nos.) and suitable mortice lock with minimum 3 keys with both sides operatable lock.
6.4	Providing 40x5 mm flat iron hold fast 30 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embeddings in cement concrete block 30x20x10/20 cm 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size)
6.5	Providing and fixing Hilti HRD carbon steel galvanised (minimum coating 5 micron) Anchor fastener of 10 mm dia double threaded 6.8 grade (yield strength 480 N/mm ²), counter sunk head, comprising of 10 mm dia polyamide PA 6 grade sleeve, including drilling of hole in frame , concrete/ masonry, etc. as per direction of CGEWHO/CGEWHO/Architect
a	10 x 100 mm
6.6	Providing and fixing Stainless steel (304 grade) fitting of approved make with necessary screws etc. complete.
a)	Sliding aldrop

SR. NO.	DESCRIPTION
	250 x 16 mm or as required
b)	Tower Bolt
i)	600 x 10mm or as required
ii)	250 x 10mm or as required
iii)	150 x 10mm or as required
c)	Handles
i)	125mm with plate 175 X32 mm
d)	Hanging floor door stopper 150 mm or as required
e)	40mm dia rubber buffer of required length with necessary stainless steel screws etc. complete
f)	Stainless steel butt hinges with necessary screws etc. complete
i)	125 x 70 x 4 mm hinges or as required
g)	Magic Eye
h)	Mortice latch & lock with six levers and a pair of lever handles (Dorset-Orius ORS/ SS or GEZE -8116431 SS finish)with necessary screws etc complete for internal doors except toilets (Cylinder with one side Knob and other side Key)
i)	Mortice latch & lock with six levers and a pair of lever handles (Dorset-Orius ORS/ SS or GEZE -8116431 SS finish)with necessary screws etc completewith magic eye & chain link for Main Door (Cylinder with one side Knob and other side Key).
j)	Mortice latch & lock with six levers and a pair of lever handles (Dorset-Orius ORS/ SS or GEZE -8116431 SS finish)with necessary screws etc complete for toilets (Cylinder with one side coin and other side knob)
6.7	Supply and Fixing of 46mm thick Fire Check door of 120 minutes fire rating fabricated with 1.2mm thick galvanised sheet with infill of fire rated Acrylic Sealant and non-combustible core bonded to both faces of sheet with lock seam joints at stile edges and internal reinforcement at top, bottom and stile edges for fire rating. The door frames are manufactured from 1.6mm thick galvanised steel sheet pressed from to double rebate profile of size 143mm x 57mm. The door frames and door shutters are finished with zinc chromate primer in accordance with BS 476 Part 22 and IS 3614 Part II for 2 Hrs. rating complete.The door frames and door shutters are inclusive of all hardware fittings as per requirement of Fire authority.
7.0	STEEL WORK
7.1	Providing and fixing Stainless steel (grade 304) railing made of Solid/ hollow sections for balcony railing and podium railing including welding, grinding, buffing, polishing and making curvature wherever required and fitting the same with necessary stainless steel nuts and bolts etc, including fixing to the wall, floor with necessary fastners etc & making good the same as per details shown in drawing.
	SS solid/hollow section or in their combination for balcony/podium railings
7.2	Providing and fixing Powder Coated M S staircase railing by welding etc, complete and fixing to the wall, floor with necessary C.C., holdfast, anchor fastner etc & making good the same as per details shown in drawing.
a	M.S. tube (medium), M.S. square bars & M.S. flat or in their combination for staircase railings, ladders, frames etc
7.3	Providing & fixing in position M.S. grating made out of M.S. flat iron, angle iron frames including applying two or more coats of synthetic enamel paint over one coat of steel primer complete as per details shown in drawing.
7.4	Structural steel work welded in built up Section trusses and frame work etc. for external façade, Terrace canopy, DG flue shaft or any other location as shown on drawing for all heights including cutting, hoisting, scaffolding, fixing in position and applying two or more coats of synthetic enamel paint over a priming coat of approved steel primer all complete as shown in drawings.
a	M.S. tubes, plates, angles etc.
7.5	Providing and fixing 14 gauge 50mm dia M.S. pipe/ M.S. D-shape hand rail section for hand rails of required shape and profile, including welding and fixing in position at all places and levels, including 2 or more coats of enamel paint over a coat of red oxide primer on all steel surfaces of approved make and manufacturer complete.
7.6	Providing and fixing T-iron frames for doors, windows of M.S. section, joint, mitred & welded with 15x3mm lugs 10cm long embedded in cement concrete blocks 15 x 10 x 10cm of 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) or as required including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer including 1mm thick M.S. sheet door with frame of 40 x 40 x 6mm angle iron and 3mm M.S. gusset plate at the junction and corners, all necessary fittings complete including a priming coat of approved steel primer using flats 30 x 6mm for diagonal braces & central cross piece.

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7.7	Providing and fixing circular/ hexagonal cast iron or M.S. sheet box for ceiling fan clamp of internal dia 140mm, 73mm height top lid of 1.5mm thick M.S. sheet with its top surface hacked for proper bonding, top lid shall be screwed into the cast iron/M.S. sheet box by means of 3.3mm dia round headed screws, one lock at the corners. Clamp shall be made of 12mm dia M.S. bar bent to shape as per standard drawing.
7.8	Providing and fixing Double seal cast Iron Manhole cover of 600x600mm in/over OH tank slab. The locking arrangement shall be made of 40x5mm MS flat with holdfast, hinges and other details including cutting welding etc as approved by Engineer in charge. The steel work shall be painted in two or more coats in approved shade over a coat of primer complete.
8.0	FLOORING
	Note: Standard flooring margin is 50mm (except for stilt & basement flooring) including margins for adjustment of provision of slope and drops. Nothing extra shall be paid for additional thickness of mortar required in flooring.
8.1	Providing and laying design mix 75-100 mm Vaccum dewatered cement concrete flooring with broom finish in Stilt, roads, driveways having a minimum works test beam flexural strength of 30 kg. per cm ² . at 28 days using not less than 340 Kg. of cement per cum of finished concrete, coarse sand and graded stone aggregate of 20mm nominal size in appropriate proportions as per specified design criteria approved by CGEWHO / Architect mechanically vibrated using needle and surface vibrators including steel form work with sturdy M. S. channel sections including curing and providing and filling construction joints and dummy joints with approved joint filler and primer including rounding of the edges and filling the grooves 10x25mm deep at top for construction joints and 10mmx50mm deep at top for dummy joints with joint sealing compound (conforming to grade B of IS : 1834) including making necessary arrangements for expansion joints etc. all complete as per design and drawing.
	a) With steel reinforcement CRS TMT bars conforming to FE 500D or above 8 mm dia 200 center to center bothways
8.2	Providing and laying at all floors 1st quality ceramic glazed tiles conforming to IS: 15622 of size 300 x 300 mm or more (thickness to be specified by the manufacturer) of approved make in all colours, shades as approved by CGEWHO/Architect, laid over 20 mm thick bed of cement mortar 1:4 (1 cement : 4 coarse sand) including pointing the joints with white cement mixed with pigment of matching shade and cleaning the surface complete in all respects. This shall also be provided in wall dado and flooring of overhead water tank (Basic rate of ceramic tile will be Rs. 350 per sqmtr).
8.3	Providing and laying Slip shield/Anti skid Vitrified floor tiles 600 x 600 mm or more (thickness to be specified by the manufacturer) of 1st quality conforming to IS: 15622 of approved brand mentioned in schedule 'E' or equivalent make in all colours, shades except white, Ivory, Grey Fume Red Brown laid on 20 mm thick bed of Cement Mortar 1:4 (1 cement:4 coarse sand) including pointing the joints with white cement and matching pigments etc. complete. (Basic rate of ceramic tile will be Rs 700.00 per sqmtrs).
8.4	Providing and fixing at all floors 1st quality Glazed Vitrified Tiles on walls conforming to IS: 15622 of 8-10 mm thickness of approved make in all colours, shades and of any size as approved by the CGEWHO/Architect in skirting, risers of steps and dados laid over 12 mm thick bed of Cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm including pointing the joints with white cement mixed with matching pigments and cleaning the surface complete in all respects. (Basic rate of ceramic tile will be Rs 700.00 per sqmtrs)
8.5	Providing and laying at all floors 1st quality Polished glazed Vitrified tiles (PGVT) in size 600 x 1200 mm and 10 mm thick in flooring with water absorption less than 0.8% and conforming to IS:15622 of approved make, colour, shade and pattern as shown on drawing and approved by CGEWHO/Architect laid over 20 mm thick bed of cement mortar 1:4 (1 cement:4 Coarse sand) and grouting the joints of flooring tiles having joints of 3 mm width, using spacer and epoxy grout mix of 0.70 kg of organic coated filler of desired shade (0.10 kg of hardener and 0.20 kg of resin per kg), including filling /grouting and finishing complete and cleaning the surface complete in all respects. (Basic rate of Vitrified tile will be Rs 900.00 per sqmtrs)

SR. NO.	DESCRIPTION
8.6	Providing and laying at all floors 1st quality Polished glazed Vitrified tiles (PGVT) in size 600 x 1200 mm and 10 mm thick in skirting with water absorption less than 0.8% and conforming to IS:15622 of approved make, colour, shade and pattern as shown on drawing and approved by CGEWHO/Architect laid over 12 mm thick bed of cement mortar 1:3 (1 cement:3 Coarse sand) and grouting the joints of flooring tiles having joints of 3 mm width, using spacer and epoxy grout mix of 0.70 kg of organic coated filler of desired shade (0.10 kg of hardener and 0.20 kg of resin per kg), including filling /grouting and finishing complete and cleaning the surface complete in all respects. (Basic rate of Vitrified tile will be Rs 900.00 per sqmtrs)
8.7	Providing and fixing at all floors 1st quality Polished glazed vitrified tiles (PGVT) of size 600 x 600 mm and 8-10 mm thickness with water absorption less than 0.8% and conforming to IS:15622 in all colours, shades and pattern of any size as approved by the CGEWHO/Architect in flooring laid over 20 mm thick bed of cement mortar 1:4 (1 cement : 4 coarse sand) and jointing with grey cement slurry @ 3.3 Kg per sqm including pointing the joints with white cement mixed with matching pigments and cleaning the surface complete in all respects. (Basic rate of Vitrified tile will be Rs 700.00 per sqmtrs)
8.8	Providing and fixing at all floors 1st quality Polished glazed vitrified tiles (PGVT) of size 600 x 600 mm and 8-10 mm thickness with water absorption less than 0.8% and conforming to IS:15622 in all colours, shades and of any size as approved by the CGEWHO/Architect in skirting, risers of steps and dados laid over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3 Kg per sqm including pointing the joints with white cement mixed with matching pigments and cleaning the surface complete in all respects. (Basic rate of Vitrified tile will be Rs 700.00 per sqmtrs)
8.9	Providing and laying at all floors 20 mm thick prepolished Quartz stone slab with facia/moulding of colour and shade as approved by the CGEWHO/Architect on Kitchen & Toilet counter slab including nosing, rounding off edges over M S frame work and brackets with a base of 20mm th hard marble stone fixed to frame work including the cost of nutbolts, fastners, araldite etc complete including pointing the joints with white cement mixed with pigment of matching shade/polymer modified adhesive mortar/acrylic solvent and cleaning the surface complete in all respects as shown on drawing. (Basic rate of Quarts Stone will be Rs 2500.00 per sqmtrs)
8.10	18 mm thick Pre-polished Granite stone slab in flooring of staircase landing, lobby & other areas etc in different shades and pattern as shown on drawing and approved by CGEWHO/Architect over 20 mm (average) thick base laid over and jointed with cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete with base of cement mortar 1:4 (1 cement : 4 coarse sand) (Basic Rate Rs. 1200 per sqmtrs).
8.11	18 mm thick Flamed Granite stone slab in flooring of staircase Treads etc in different shades and pattern as shown on drawing and approved by CGEWHO/Architect over 12-20 mm (average) thick base laid over and jointed with cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete with base of cement mortar 1:4 (1 cement : 4 coarse sand) (Basic Rate Rs. 1200 per sqmtrs). The single piece of stone shall be fixed in Treads.
8.12	18 mm thick Pre-polished Granite stone in Riser, Skirting and dado in different shades and pattern as shown on drawing and approved by CGEWHO/Architect over 12-20 mm (average) thick base laid over and jointed with cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete with base of cement mortar 1:4 (1 cement : 4 coarse sand) (Basic Rate Rs. 1200 per sqmtrs). The single piece of stone shall be fixed in risers.
8.13	Providing and fixing at all floors 18 mm thick pre polished granite stone slab of colour and shade as approved by the Architect/Project Manager in lift facia walls dados and borders in dado including rounding of edges as shown in drawing laid on 20mm thick bed of cement mortar 1:2 (1 cement: 2 coarse sand) and jointing with grey cement slurry @ 3.3. kg per sqm including pointing the joints with white cement mixed with matching pigment and cleaning the surface complete in all respects including the cost of SS cramp as required. (Basic rate of Granite Stone will be Rs 1200.00 per sqmtrs)
8.14	50 mm thick Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement, including cement slurry & cost of nosing of steps etc. complete in Services shafts and Lift Pit etc.

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	Handles, rubber gaskets, hinges, locks , Friction stays and required accessories shall be included and provided as per system company design. The system should be tested for Air tightness and water penetration as per EN/BS/IS standards. Weather silicon sealant of dow crowing over backer rod, to be used to make glazing weather and water tight. All windows/Doors Shall be prefabricated factory made. Glass must be DGU glass with 6+12+6 MM thick Toughened float glass (ST-167 - Sparkling Ice) of saint gobain or equivalent make.
	a) Casement Window single panel with friction hinges Made of Frame 45 x 50 mm & Sash 45 x 78 mm both having wall thickness of 1.8 (+ 0.2 mm) and single glazing bead. (Area upto 0.75 sqm)
	b) Casement Window double panels with Top fixed with friction hinges Made of Frame 65 x 58 mm, Sash 65 x 80 mm & mullion 65 x 80 mm all having wall thickness of 1.8 (+ 0.2 mm) and single glazing bead. (Area above 0.75 sqm.)
	c) Fixed Window/ Ventilator: Made of Frame 45 x 50 mm and Mullion (if required) both having wall thickness 1.8 (+ 0.2 mm) and single glazing bead. (Area upto 0.75 sqm)
9.2	Providing and fixing factory made uPVC white colour sliding glazed window comprising of uPVC multi-chambered frame with in built roller track and sash extruded profiles duly extruded profiles duly reinforced with G.I section,(The thickness of GI should be selected to meet the wind load requirement as per IS 875- Part III on sash/mullion. Supplier should be submitting wind load calculation & validation complying with IS-875-III before material supply. Minimum steel reinforcement thickness of 1.2mm to 2.5mm. UPVC Windows & Doors must be fabricated with fusion welded corners & must conform to the strength requirements based on wind load as per IS 875-Part III.), Upvc glazing bead, Upvc interlock, EPDM gasket, brush seal, zinc alloyed (white powder coated)touch lock, single nylon roller, G.I fastener 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screw, etc. Profile of frame & sash shall be mitred cut and fusion welded at all corners, including drilling of holes for fixing hardware from www.bifma.org" in each case. Model No ZELDA/DC- 1 Nos
	The required accessories shall be included and provided as per system company design. The system should be tested for Air tightness and water penetration as per EN/BS/IS standards. Weather silicon sealant of dow crowing over backer rod, to be used to make glazing weather and water tight. All Doors Shall be prefabricated factory made. Glass must be DGU glass with 6+12+6 MM thick Toughened float glass (ST-167 - Sparkling Ice) of saint gobain or equivalent make.
	a) Casement Door with top fixed, with 3D hinges: Made of Frame 65 x 73 mm having wall thickness of Frame 2.7mm (+ 0.2 mm),Sash 65 x 105 mm having wall thickness of 1.8mm(+ 0.2 mm) and Mullion 65 x 80 mm having wall thickness of 1.8mm(+ 0.2 mm) and single glazing bead/ double glazing bead.
9.3	Providing and fixing factory made uPVC white colour sliding glazed window comprising of uPVC multi-chambered frame with in built roller track and sash extruded profiles duly extruded profiles duly reinforced with G.I section,(The thickness of GI should be selected to meet the wind load requirement as per IS 875- Part III on sash/mullion. Supplier should be submitting wind load calculation & validation complying with IS-875-III before material supply. Minimum steel reinforcement thickness of 1.2mm to 2.5mm. UPVC Windows & Doors must be fabricated with fusion welded corners & must conform to the strength requirements based on wind load as per IS 875-Part III.), Upvc glazing bead, Upvc interlock, EPDM gasket, brush seal, zinc alloyed (white powder coated)touch lock, single nylon roller, G.I fastener 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screw, etc. Profile of frame & sash shall be mitred cut and fusion welded at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod (if required)of required size and approved quality, all complete as per approved drawing and direction of Engineer-in-Charge. Company must have own production facilities (extrusion & fabrication) & control the entire cycle from Extrusion to Installation to Post Sales Service. UPVC windows & doors must be installed by profile manufacturer only.
	The required accessories shall be included and provided as per system company design. The system should be tested for Air tightness and water penetration as per EN/BS/IS standards. Weather silicon sealant of dow crowing over backer rod, to be used to make glazing weather and water tight. All Doors Shall be prefabricated factory made through authorized Fabricator of System company. Glass must be DGU glass with 6+12+6 MM thick Toughened float glass (ST-167 - Sparkling Ice) of saint gobain or equivalent make. SS fly mesh shall consist average width of aperture 1.4 mm and nominal dia of wire 0.63 mm.

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	a) Three track three panels sliding window with fly proof S.S wire mesh(Two nos.glazed & one no. wire mesh panels): Made of Frame 118 x 50mm & Sash 45 x 60mm having wall thickness of 1.8 mm(+ 0.2mm) and single glazing bead/double glazing bead.
9.4	Providing and fixing factory made uPVC white colour sliding glazed window comprising of uPVC multi-chambered frame with in built roller track and sash extruded profiles duly reinforced with G.I section,(The thickness of GI should be selected to meet the wind load requirement as per IS 875- Part III on sash/mullion. Supplier should be submitting wind load calculation & validation complying with IS-875-III before material supply. Minimum steel reinforcement thickness of 1.2mm to 2.5mm. UPVC Windows & Doors must be fabricated with fusion welded corners & must conform to the strength requirements based on wind load as per IS 875-Part III.), Upvc glazing bead, Upvc interlock, EPDM gasket, brush seal, zinc alloyed (white powder coated)touch lock, single nylon roller, G.I fastener 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screw, etc. Profile of frame & sash shall be mitered cut and fusion welded at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod (if required)of required size and approved quality, all complete as per approved drawing and direction of Engineer-in-Charge. Company must have own production facilities (extrusion & fabrication) & control the entire cycle from Extrusion to Installation to Post Sales Service. UPVC windows & doors must be installed by profile manufacturer only.
	The required accessories shall be included and provided as per system company design. The system should be tested for Air tightness and water penetration as per EN/BS/IS standards. Weather silicon sealant of dow crowing over backer rod, to be used to make glazing weather and water tight. All Doors Shall be prefabricated factory made through authorized Fabricator of System company. Glass must be DGU glass with 6+12+6 MM thick Toughened float glass (ST-167 - Sparkling Ice) of saint gobain or equivalent make. SS fly mesh shall consist average width of aperture 1.4 mm and nominal dia of wire 0.63 mm.
	a) Three track three panels sliding door with fly proof S.S wire mesh(Two nos. glazed &one no. wire mesh panels): Made of Frame 118 x 50 mm having wall thickness of 1.8mm(+0.2mm) & Sash 45 x 90 mm having wall thickness of 1.8mm((+ 0.2mm) and single glazing bead/double glazing bead.
	b) Four track Four panels sliding door with fly proof S.S wire mesh(Three nos. glazed &one no. wire mesh panels): Made of Frame 170 x 50 mm having wall thickness of 1.8mm(+0.2mm) & Sash 45 x 90 mm having wall thickness of 1.8mm((+ 0.2mm) and single glazing bead/double glazing bead.
9.5	Deduct for providing 6mm thick Frosted glass glass panes instead of DGU 6+12+6 mm thick Toughened glass in glazed doors, windows and clerestory window shutters, in toilet windows.
10.0	FINISHING
	Note: The external and Internal walls casted with Aluminium Shuttering shall not be plastered. Only applying putty & grinding shall be done to get even surfaces. Area with Brick work shall only be plastered.
10.1	Providing & applying Ready mix plaster with sand ready mix dry mortar in bags for plastering from the approved manufacturer in readymade PP bags of high quality laminated bags/Ad star bags. The specifications for cement used should be in line with IS 4031-1988 for physical tests and IS 1542-1977 & IS 2116-1980 accordingly. The power additives used should be of good quality make. The Ready Mix Mortars should complies to IS 2250-1981 with water to power ratio of 0.16-0.19 and having min 28 day pullout strength requirement of >0.3 MPa (as per ASTM D 7234-12) and 28 days compressive strength of > 5MPa (as per ASTM C 109-95). Also product should meet the VOC standards of <1% by Mass, including scaffolding, tool & plants etc Complete
a)	12 mm Ready Mix plaster on RCC wall /230mm thick brick walls.
b)	15mm Ready Mix plaster on RCc walls/the rough side of single or half brick wall.
c)	15mm Ready Mix plaster on concrete wall/single or half brick wall mixed with waterproofing compound as per manufacturer recommendations and finished with a floating coat of neat cement.(In Plumbing Shafts)
d)	6 mm Ready Mix plaster to ceiling including grooves.

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e)	18 mm Ready Mix plaster in two coats under layer 12 mm thick Ready Mix plaster and a top layer 6 mm thick Ready Mix plaster mixed with approved water proofing compound 2% by weight of cement and finished smooth on the external surface of buildings for all heights and levels including forming grooves, scaffolding etc as per drawings. (External Plaster shall not been done on the external face of RCC surface casted with Aluminium Shuttering. The areas which shall be necessary to cast with wooden/Ply shuttering shall be plastered only)
10.2	Providing and fixing 150 mm wide chicken wire mesh of 22 gauge on the wall/column/beam junctions and over PVC conduit and GI/CPVC pipe with nails etc. complete.
10.3	Providing and applying Cement based putty in line and level over plastered/RCC surface to prepare the surface even and smooth complete and to the satisfaction of CGEWHO/Architect as follows:
a	For internal walls (Two coats of 1mm thick each)
b	For external walls (Two coats of 1mm thick External grade putty each) on External RCC Facade duly grinded with machines
10.4	Providing POP 125 mm cornice on the junction of beam and slab with in dwellings only in line and level as per the design shown in drawing.
10.5	Wall painting with Premium acrylic emulsion paint of interior grade having VOC (Volatile Organic compound) content less than 50 grams /litre of approved brand and manufacture, including applying 2 or more coats where ever required to achieve even shade and colour. (as approved by CGEWHO/Architect) including one priming coat with primer of approved brand and manufacture, having low VOC content with water thinnable cement primer on wall surface having VOC content less than 50 grams/lite.
10.6	Finishing All exterior walls with Textured painting (exterior grade) applied @ 3.28 kg/10 sqm over and including priming coat applied @ 2.20 lt/10sqm & exterior grade cement based putty on all surface of approved make shade and colour on all heights and levels. The rate shall include all operations of work including machine grinding to make the surface even & scaffolding required for painting at all heights and as per specifications.
10.7	Applying priming coat with ready mixed Red oxide zinc chromatic primer with VOC content less than 250 grams/litre of approved brand and manufacture on steel work.
10.8	Painting with synthetic enamel paint having VOC content less than 50 grams/litre of approved brand and manufacture including applying 2 or additional coats where ever required to give an even shade with two or more coats on new work.
10.90	Applying priming coats with Primer of approved brand and manufacture having ready mixed pink or grey primer on wood work having VOC content less than 50 grams/litre
10.10	Finishing walls and ceiling with Water Proofing Cement Paint of approved shade, brand and manufacture including 2 or more coats @ 3.84 kg/10 sqm where ever required to achieve even shade and colour.
a)	In Stilt Floor
10.11	Two or more coats of White washing with lime to give an even shade on New work complete.
10.12	Providing , applying and finishing the Main door Shutter & frame with two or more coats of PU Matt polish complete on new works including a coat of wood filler etc
11.0	WATER PROOFING/ ROOFING
11.1	Providing and laying water proofing treatment to vertical and horizontal surfaces of sunken portions of Balconies, Toilet, W.C, Kitchen, Stilt etc and the like consisting of the following operations:
a	1st course of applying cement slurry @ 4.4 kg/sq m mixed with water proofing compound conforming to IS 2645 in recommended proportions including rounding off junction of vertical and horizontal surface.
b	2nd course of 20 mm cement plaster 1:3 (1 cement : 3 coarse sand) mixed with water proofing compound in recommended proportion including rounding off junction of vertical and horizontal surface.
c	3rd course of applying three coats of tapecrete or equivalent waterproofing, each coat shall be mixed with cement in the proportions recommended by the manufacturer.

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d	4th course of 10 mm cement plaster 1:4 (1 cement : 3 coarse sand) mixed with water proofing compound in recommended proportion including rounding off junction of vertical and horizontal surface.
	The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer modified slurry.
11.2	Providing and Placing in position suitable PVC water stops conforming to IS:12200 for construction/ expansion joints between two RCC members and fixed to the reinforcement with binding wire before pouring concrete etc. complete : Dumb bell with central bulb (180mm wide, 8mm thick).
11.3	Providing and laying 3mm thick APP (Atactic Polypropylene Polymer) modified prefabricated five layer, 3 mm thick water proofing membrane, black finished reinforced with glass fibre matt consisting of a coat of bitumen primer for bitumen membrane @ 0.40 litre/sqm by the same membrane manufactured of density at 25°C, 0.87 - 0.89 kg/litre and viscosity 70 - 160 cps. Over the primer coat the layer of membrane shall be laid using butane torch and sealing all joints etc., and preparing the surface complete. The vital physical and chemical parameters of the membrane shall be as under : Joint strength in longitudinal and transverse direction at 23°C as 350/300 N/5 cm. Tear strength in longitudinal and transverse direction as 60/80N. Softening point of membrane not less than 150°C. Cold flexibility shall be upto -2°C when tested in accordance with ASTM, D - 5147. The laying of membrane shall be got done through the authorised applicator of the manufacturer of membrane.
11.4	Covering top of membrane with Geotextile , 120 gsm non woven, 100% polyester of thickness 1 to 1.25 mm bonded to the membrane with intermittent touch by heating the membrane by Butane Torch where ever required or as per manufactures recommendation.
11.5	Covering subsoil water/rain water drains in landscape area/podium with Geotextile , 120 gsm non woven, 100% polyester of thickness 1 to 1.25 mm where ever required or as per manufactures recommendation.
11.6	Providing and laying minimum 50 mm Screed concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) mixed with crystalline waterproofing, above the water proofing membrane as a protection layer to water proofing in slope as per directions of Architect/CGEWHO.
11.7	INTEGRAL CRYSTALLINE WATER PROOFING Providing and laying Integral crystalline water proofing material for horizontal and vertical surface and entire thickness of Over ground RCC water retaining structures like OHT in specified proportions (minimum 2 % of weight of cement or as specified by the manufacturer). Properly Mixing in RMC/BMC/RCC in specified proportions as per the approved brand of crystalline waterproofing material like Xypex 2000 NF/ Panetron/Kryotone etc with RMC/BMC. Thoroughly mixing to workable consistency and pouring and casting in position within 20 minutes,Vibrating with mechanical vibrators and compaction etc. complete as per direction of Engineer In-charge. The water proofing compound used in integral crystalline water proofing treatment shall satisfy all the requirements indicated in relevant BIS standards and shall be got tested before and after its use. Total quantity of the water proofing compound required shall be arranged only after obtaining the prior approval of the CGEWHO/Architect in writing. Materials shall be kept under double lock and key and proper account of water proofing compound used in the work shall be maintained. It shall be ensured that the consumption of the compound is as per specified requirements. Contractor shall associate himself with anyone of the specialist firms mentioned in approved list of specialized agencies for the work relating to the Water Proofing Treatment. In case the contractor intends to get the water proofing work executed from an agency other than as specified, he shall apply to the CGEWHO/Architect in writing along with the credentials and relevant details including name of owner/company, its location, capacity technical establishment, past experience etc. CGEWHO/Architect shall give approval in writing and the work shall not be started without said written approval of the CGEWHO/Architect. The entire responsibility for the quality of this treatment and its efficiency shall however, rest with the main contractor only.
11.8	TERRACE ROOF TREATMENT Providing and laying integral cement based water proofing treatment including preparation of surfaces as required for treatment of roofs and terraces consisting of the following operations:

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a	Applying one coat of acrylic polymer modified cement slurry coating over the RCC surface and continued upto height of 250 mm from the roof slab. Laying fibre glass cloth over the applied surface when the coating is still green and there after applying one more coat of acrylic polymer modified cement brush topping over the fibre glass cloth.
b	Laying cement concrete using broken bricks bats 50 mm to 100mm size with 50% cement mortar 1:4 (1 cement : 4 coarse sand) admixed with approved water proofing compound over 20 mm thick layer of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with approved acrylic polymer based water proofing compound and top layer with 25 mm thick cement mortar 1:4 (1 cement:4 coarse sand) admixed with above water proofing compound to required slope and treating similarly the adjoining walls upto 300mm height including rounding of the junctons of wall and slabs.
c	After two days of proper curing a second coat of cement slurry admixed with approved water proofing compound shall be laid, finishing the surface with 20 mm thick joint less layer of cement mortar 1:5 (1 cement: 5 coarse sand) admixed with approved water proofing compound conforming to IS 2645 and finally finishing the surface with trowel with neat cement slurry and making of 300x300 square.
d	The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for the final test. All above operations to be done in order and as directed and specified by the CGEWHO/Architect
e	RCC surface to be cleared of all dirt, loose material and kept dry and holes/cracks to be repaired With average thickness of 120 mm and minimum thickness at shurra as 65 mm.
11.9	Making khurras 45 x 45 cm with average minimum thickness of 5cm cement concrete 1:2:4 (1 cement : coarse sand : 4 graded stone aggregate of 10 mm nominal size) over P.V.C sheet 1m X 1m X400 micron, finished with 12 mm cement plaster 1:3 (1 cement :3 coarse sand) and a coat of neat cement rounding the edges and making and finishing the outlet complete.
11.10	Injection Grouting with cement slurry and admixed with non shrinking grouting compound through nozzle under pressure by pump at every 1m vertical and horizontal distance to all RCC structure of water retaining structures like OHT. the nozzle shall be sealed off after injection operation is over with pozzolith 100 HE admixed with cement.
11.11	Providing and fixing of hygroscopic water proofing seal (Swellable water bar of pidilite or equivalent) in all expansion/construction joints in RCC structure works as per the manufacture's specification
12	ALUMINIUM WORK
12.1	Providing and fixing anodised aluminium box section frame and shutters with 75 mm wide louvers including necessary hinges, handles, locks and all fittings as per drawings for shafts coverings. (Electric, LV, Plumbing etc shafts)
a	Aluminum Frame in approx 50mm x 100 mm section
b	Aluminum Door panel in approx 50 mm x 50 mm section
12.2	Providing and fixing Red colour powder coated (60 micron) aluminium box section frame and shutters with 5 mm thick clear glass including necessary hinges, handles, tower bolts, mortised lock etc all fittings as per drawings for shafts coverings. (fire shafts) The door shall be Factory Fabricated.
a	Aluminum Frame in approx 50mm x 100 mm section
b	Aluminum Door panel in approx 50 mm x 50 mm section
12.3	Providing and fixing machine moulded aluminium covering of approved patterns & design, made out of machine holed for receiving dashed fastners, over expansion joints on vertical surfaces /ceiling floors , the fixing on plate in one row on one side of jointing shall be done with stainless steel dash fastners of 8mm dia and 75 mm long bolt including providing aluminium washers 2mm thick & 15mm dia, at a staggered pitch of 200mm centre to centre including drilling holes in the receiving surface and providing expandable plastic sleeves in holes etc as per direction of CGEWHO/Architect.
a	Anodised aluminium sheet 2.5 mm thick (anodised transparent or dyed to required shade according to IS: 1868, minimum anodic coating of grade AC 15)
b	Powder coated aluminium sheet 2.5 mm thick (minimum thickness of powder coating 50 micron)

SR. NO.	DESCRIPTION
c	Providing and fixing of 40 to 200mm wide expansion joint system related with floor location as per drawings and direction of Engineer-In-Charge. The joints system will be of extruded aluminum base members, self aligning / self centering arrangement and support plates etc. as per ASTM B221-02. The system shall be such that it provides floor to floor /floor to wall expansion control system for various vertical location in load application areas that accommodates multi directional seismic movement without stress to it's components. System shall consist of metal profiles with a universal aluminum base member designed to accommodate various project conditions and finish floor treatments. The cover plate shall be designed of Aluminium of required thickness and width to satisfy projects movement and loading requirements and secured to base members by utilizing manufacturer's pre-engineered self- centering arrangement that freely rotates / moves in all directions. The Self – centering arrangement shall exhibit circular sphere ends that lock and slide inside the corresponding aluminum extrusion cavity to allow freedom of movement and flexure in all directions including vertical displacement. Provision of Moisture Barrier Membrane in the Joint System to have watertight joint is mandatory requirement all as per the manufactures design and as approved by Engineer -in- Charge . (Material shall confirm to ASTM 6063.)
12.4	Filling the gap in between aluminium frame and adjacent RCC/Brick/Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of CGEWHO/Architect complete.
a	upto 5mm depth & 5mm width
12.5	Providing and fixing aluminum work for Powder coated aluminum (minimum thickness of powder coating 50 micron) aluminum louvers with standard sections of approved make conforming to IS: 733 and IS : 1285, 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 silicone sealant all complete as per architectural drawings complete in all respects as per direction of the Engineer-in-charge. (FOR VENTILATION CUTOUTS)
12.6	Providing and fixing Aluminium Composite Sheet Cladding using 4 mm thick sheet of approved make consisting of a core of 3mm natural polyethylene core sandwiched between two skins (0.5 mm each) of aluminium alloy with outer surface in all colour coating of PVDF paint in fully automatic coil coating process. The PVDF coated finished surface to be factory protected with self-adhesive peel off foil tested to withstand at least 6 months exposure to local weathering conditions. The composite sheet cut and bent to shaped profiles as required to, including perimeter extrusions base frame, extruded stiffeners, expansion fasteners & silicone sealant (Dow Corning 789) required for installation as per approved elevation drawing. (For DG Flue Shaft)
13.0	FALSE CEILING
13.1	Providing and fixing tiled false ceiling of specified materials of size 595x595 mm in true horizontal level, suspended on interlocking metal grid of hot dipped galvanized steel sections (galvanized @ 120 grams/ sqm, both side inclusive) consisting of main "T" runner with suitably spaced joints to get required length and of size 24x38 mm made from 0.30 mm thick (minimum) sheet, spaced at 1200 mm center to center and cross "T" of size 24x25 mm made of 0.30 mm thick (minimum) sheet, 1200 mm long spaced between main "T" at 600 mm center to center to form a grid of 1200x600 mm and secondary cross "T" of length 600 mm and size 24x25 mm made of 0.30 mm thick (minimum) sheet to be interlocked at middle of the 1200x600 mm panel to form grids of 600x600 mm and wall angle of size 24x24x0.3 mm and laying false ceiling tiles of approved texture in the grid including, required cutting/making, opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc. Main "T" runners to be suspended from ceiling using GI slotted cleats of size 27 x 37 x 25 x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm GI adjustable rods with galvanized butterfly level clips of size 85 x 30 x 0.8 mm spaced at 1200 mm center to center along main T, bottom exposed width of 24 mm of all T-sections shall be pre-painted with polyester paint, all complete for all heights as per specifications, drawings and as directed by Engineer-in-charge.
a	8 mm thick light weight calcium silicate board made with Calcareous & Siliceous materials reinforced with cellulose fiber manufactured through autoclaving process. (In Toilets of Dwelling Units)

SR. NO.	DESCRIPTION
13.2	Providing and fixing tiled false ceiling of approved material of size 595x595mm in true horizontal level , suspended on interlocking metal grid of hot dipped galvanised steel sections (galvanised @ 120gm/sqm, both side inclusive) consisting of main "T" runner with suitably spaced joints to get required length and of size 24x38mm made from 0.30mm thick sheet, spaced at 1200mm c/c to form a grid of 1200x600mm and secondary cross "T" of length 600mm and size 24x25mm made of 0.30mm thick sheet to be interlocked at middle of the 1200x600mm panel to form grid of 600x600mm and wall angle of size 24x24x0.30mm and laying false ceiling tiles of approved texture in the grid including required cutting/making , opening of services like diffusers, grills, light fittings, fixtures, smoke detectors ect. Main "T" runners to be suspended from ceiling using GI slotted cleats of size 27x37x25x1.6 mm fixed to ceiling with 12.5 mm dia and 50mm long dash fastners ,4x0.8mm spaced at 1200 mm c/c along main "T" , bottom exposed width of all T-sections shall be pre painted with polyster paint , all complete for all heights as per specifications, drawings and as directed by CGEWHO/Architect.
	GI metal ceiling lay in plain Tegular edge global white color tiles of size 595x595 mm and 0.5 mm thick with 8mm drop; made of GI sheet having galvanising of 100gm/sqm both sides inclusive and electro statically polyster powder coated of thickness 60 microns minimum, including factory painted after bending. (In Stilt and Common areas to cover the plumbing pipes)
13.3	Wooden false ceiling Providing and fixing of interlocking wooden false ceiling of approved shape, size, colour & texture in Reception area with decorative veneer finish as per approved make, colour and texture with melamine polish over required GI/wooden frame work as per vendor design, drawings, specification and direction of CGEWHO/Architect.
13.4	Aluminium Louvered Wall Panelling Providing and fixing of interlocking Aluminium fluted wall panelling in Reception area with 20 mm wide and 20mm deep flutes with decorative veneer finish as per approved make, colour and texture over required GI/aluminium frame work as per vendor design, drawings, specification and direction of CGEWHO/Architect.
14.0	MISCELLANEOUS WORK
14.1	Making plinth protection 50 mm thick of cement concrete 1:3:6 (1 cement: 3 coarse sand: 6 graded stone aggregate 20 mm nominal size) over 75 mm bed of dry brick ballast 40 mm nominal size well rammed and consolidated and grouted with fine sand including finishing the top smooth, centering and shuttering complete as per drawing.
14.2	Supplying and fixing 10 mm thick multi wall poly carbonate sheet with aluminium profile (powder coated) with EPDM gasket in between with self drilling screws, necessary silicones to make the structure water tight complete as per drawing and fixed to steel structure with necessary base plates complete in all respects, all as per manufacturer's specifications and Architects directions (make: GE or approved equivalent). (For Ramp Cover)
14.3	Providing and fixing of Letter boxes of standard size with locking arragment with marking of dwelling unit number on letter box of approved colour and make complete.
14.4	Signages with back lit stainless steel letters min 2'-6" high in hindi and english and CGEWHO logo to be fixed as per design and drawing complete.
14.5	Numbering of each dwelling unit with stainless steel plate with numbers fixed to front door complete as per design.
14.6	Providing and fixing Reflective Rubber Column Protection Guard 1mtr high and min 10mm thick fixed with Necessary glue/screws etc complete for all four corners.
14.7	Painting Parking slots, driveways, parking numbers etc with adequate no. of coats to give uniform finish with road marking paint of superior make as approved by the CGEWHO/Architect i/c cleaning the surface of all dirt, scales, oil, grease and other foreign material etc. and lining out complete. New work (two or more coats)
14.8	Providing and laying Foam concrete in sunken portion
14.9	Core cutting in RCC structure of any dia required as per specification / drawing including the cost of supplying and applying Acrylic Polymer mortar for filling gap around the pipe and core hole as per specifiacion.

SR. NO.	DESCRIPTION
14.10	Providing and laying 110mm dia uPVC sleeves in the walls for Copper pipes of Split AC. The copper pipes shall be laid by the owner lateron. The Sleeve shall be closed by means of suitable PUF foam and finished with respective wall finishing. The Drain pipes shall be laid from IDU to external drainage manhole as shown in drawings.
14.11	Providing and laying 110mm dia or more uPVC sleeves in the beams for soil, waste & vent pipes at the desired location as per site .
14.12	Providing and laying 200mm dia uPVC sleeves in the walls for Chimney in kitchen. The flexible pipes shall be laid by the owner lateron. The Sleeve shall be closed by means of suitable uPVC cap & PUF foam and finished with respective wall finishing.
14.13	All the civil works required for installation of IGL gas connection in dwelling units ie trench, manhole, necessary repairs in external façade, plaster etc, shall be including the quoted rates.
15	FURNITURE
15.1	Two Seater Sofa-Model No Berry/55001/2- Supplying And Placing Two Seater Exclusive Premium Leatherette Modernist Classic Design Lounge Seating Sofa Size Is 1410mm(L) X890mm(D)X 870mm(H) With Kiln-Dried Wood Framing Makes It Warp And Scratch Resistant,Comfortable Seat Depth & Height Designed Keeping Modern Indian Lifestyle In Mind,Wrapped In Buttery-Soft Premium Leatherette, The Panelled Back And Cushioned Armrests Encourage Lounging, Designed With Modernity & Elegance, Choose The Option That Suits Your Home.Combination Construction Structure Are Made In Moisture Content Shall Be Less Than (10-12)%. Thickness Of Plywood Used (Mm) Shall Be 12 Mm Grade Is 303 Indian Standard For Commercial (Common) And Moisture Proof Plywood (Tentative). Understructure Frame Shall Be Constructed From 18 Mm Thick Kiln-Dried German Beech Wood Framing Is Highly Durable. The Complete Structure Shall Be Covered By P.U.Foam Fixed With Adhesive Glue ,The Frame Shall Be Padded With High Resilience Polyurethane Foam Having 28 +/- 5 Densof all T-sections shall be pre painted with polyester paint , all complete for all heights as per used ,There Shall Be Cushion Arm 40mm Thick Provided Padded With High Resilience Polyurethane Foam Having Density 20 +/- 5. The Complete Stack Foam Structure Shall Be Covered With Premium Leatherette In Black-Eerie Black-Coffee Brown,Brown-Burnt Umber Colour, It Complements The Modish Legs Are Made By Round Shape In Pvc Material.(Seat : 510 Mm(D) X 445mm(H) , Arms Height @ 620mm / Back Height @ 460mm)The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org" in each case.- 6 Nos. in Each Entrance lobby
15.2	Providing & Supply of CENTER TABLE having dimensions shall be: (W)1080mm X (D)550mm X (H)450mm model no Fox/CT.The Table collection offers an abundance of style and storage for the modern living space.The rounded silhouettes with metallic accent stand firmly on solid wood tapered legs making it truly contemporary.Featuring with Designed from 10mm thick clear glass,Spacious tabletop,Easy access storage and Strong Beech wood legs.The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org" in each case.-3 Nos in Each Entrance lobby
15.3	Providing & Supply of SIDE TABLE having dimensions shall be: (W)520mm X (D)400mm X (H)555mm, model no FOX/ST.The Side Table collection offers an abundance of style and storage for the modern living space.The rounded silhouettes with metallic accent stand firmly on solid wood tapered legs making it truly contemporary.Featuring with Designed from 10mm thick clear glass,Spacious tabletop,Easy access storage and Strong Beech wood legs.The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org" in each case.-3 Nos. in Each Entrance lobby

SR. NO.	DESCRIPTION
15.4	Supplying And Placing In Position Of The Reception Table Dimension :-1500w X 700d X 750ht As Per Layout (Model :MOD).The Top Shall Be Made In 30mm Thick Pre-Laminated Particle Board With 2mm Thick Pvc Edgebanding.Front Panel Shall Be Made In 18mm Thick As Per Shown Design With Glass At Above Supporting On Ss Pole.Understructure Shall Be Made In 18mm Thick With Equal Distance As Shown.2 Mobile Pedestal (2 Drawers + 1 Filing Cabinet)Size Is 450 Mm(L) X 450 Mm(D)X 725 Mm(H) In Provided With Central Lock's For Security And Handle's Are Provided For Easy Of Opening & Pedestal's Move On Nylon Castors.The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org" inof all T-sections shall be pre painted with polyster paint , all comp
15.5	Providing & Suppling Placing In Position of Chair ,Overall dimension are (W) 550mm X (D) 660mm X (H) 1010mm.With a modern profile & comfortable cushioning, the chair is designed for tableside lingering. Premium fabric upholstery in beige masterfully tailors the seat and tapered back with distinctive stitch detail, elegantly perching on dark Walnut finished solid wood legs in refined sophistication. Featuring with Kiln-dried solid wood construction makes it warp and scratch-resistant,Tapered cushioned backrest and firm seat offer comfortable seating experience and Decorative stitch details on the back compliments the design. The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provof all T-sections shall be pre painted with polyster paint , al
16.0	EXPANSION JOINTS
	Expansion joints shall be provided where shown on the drawings or as directed by CGEWHO/Architect. They shall be constructed with an initial gap between the adjoining parts of the works of the width specified in the drawings.The contractor shall ensure that no debris is allowed to enter expansion joints. Expansion joints shall be provided as per drawing. Contractor shall ensure that expansion joints are made watertight and that no leakage occurs through these joints for which he shall be responsible to re do at his own cost.
16.1	OPEN JOINT FILLERS
	Where shown on the drawings, open joints in the structure shall be filled with joint fillers. The joint fillers shall be easily and uniformly compressible to its original thickness, tampable, easily cut or sawn, durable resistant to decay due to termite or weathering unaffected by water and free of any constituent, which will bleed into or stain the concrete. The joint filler shall be of same thickness of the joint width, it shall extend through the full thickness of the concrete unless otherwise specified and shall be sufficiently rigid during handling and placing to permit the formation of straight joints.
16.2	JOINT SEALING COMPOUNDS
	Joint sealing compounds shall seal joints in concrete against the passage of water, prevent the ingress of grit or other foreign material and protect the joint filler. The compound shall have good extensibility and adhesion to concrete surfaces and shall be resistant to flow and weathering. Poly-sulphide joints where specified on the drawings shall be sealed with polysulphide liquid polymer, stored, mixed, handled, applied and cured strictly in accordance with the manufacture's written instructions. Such joint shall be formed to the correct dimensions, thoroughly cleaned and treated with recommended primer strictly in accordance with the manufacturer's written instructions prior to sealing. The Contractor shall use only competent personnel experienced in the application of polysulphide for such work. Where specified in the drawings, rubber/bituminous based sealants shall be of an approved manufacturer's written instructions.
16.3	WATER BARS

SR. NO.	DESCRIPTION
	<p>Where water bars are shown on the drawings, the joints shall incorporate an approved PVC external type water-bar complete with all necessary molded or prefabricated intersection pieces assembled in accordance with the drawings with bends and butt joints in running lengths made by heat welding in an electrically headed jig. Jointing and fixing of water bars shall be carried out strictly in accordance with the manufacturer's written instructions. The water bars shall be installed so that they are securely held in their correct position during the placing and compacting of the concrete. Where reinforcement is present adjacent to water bars, adequate clearance shall be left between the reinforcement and water bars to facilitate compaction of the concrete. During headed nails may be used in the edge of the water bar outside the line of the external grooves for fixing purposes, but no other holes shall be permitted through the water bar.</p>

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION
SCHEDULE OF FINISHES- RESIDENTIAL BLOCKS

SCHEDULE D2B

S.N.	Details	Flooring	Wall finishes		Door Frames /Shutters	Windows/ Ventilators	Railing
			Interior	Exterior			
	RESIDENTIAL TOWER						
1	Drawing & Dinning Room	Polished glazed Vitrified tiles (PGVT) 600mm X 1200mm with 3mm spacer filled with epoxy grout of matching colour, with matching skirting.	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion paint with primer & POP cornice	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	Main door : Polished 2nd class Teak wood double rebate frame and Teak finish both sides Laminated Flush door shutter. External Stainless Steel Security door shall be with fly proof wire mesh shutter.	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters	
2	Master Bedroom 1	Polished glazed Vitrified tiles (PGVT) 600mm X 1200mm with 3mm spacer filled with epoxy grout of matching colour, with matching skirting.	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion paint with primer & POP cornice	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	Enamel Painted Mango wood Frames and both sides Laminated Flush Door shutters.	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters	-
3	Bed Room 2	Polished glazed Vitrified tiles (PGVT) 600mm X 1200mm with 3mm spacer filled with epoxy grout of matching colour, with matching skirting.	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion paint with primer & POP cornice	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	Enamel Painted Mango wood Frames and both sides Laminated Flush Door shutters.	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters	-
4	Bed Room 3	Polished glazed Vitrified tiles (PGVT) 600mm X 1200mm with 3mm spacer filled with epoxy grout of matching colour, with matching skirting.	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion paint with primer & POP cornice	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	Enamel Painted Mango wood Frames and both sides Laminated Flush Door shutters.	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters	-
5	Toilets	Slip Shield/Anti Skid Vitrified Tiles 600mm X 600mm on floors, Quartz Stone on counter over stone base on M.S. frame work and brackets	Glazed Vitrified Tiles 600mm x 1200mm upto false ceiling . White wash on RCC ceiling & wall above false ceiling.	Exterior weather proof Texture paint over a coat of primer & cement based putty	Enamel Painted Mango wood Frames and both sides Laminated Flush Door shutters.	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters	-
6	Kitchen	Polished glazed Vitrified tiles (PGVT) 600mm X 600mm. Kitchen Counter, Quartz Stone on counter over stone base on M.S. frame work and brackets, Sink, Sink Mixture etc	Polished Glazed Vitrified Tiles 600mm x 600mm upto 600mm above counter and areas shown in drawings. Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion paint with primer and POP cornice	Exterior weather proof Texture paint over a coat of primer & cement based putty	Enamel Painted Mango wood Frames and both sides Laminated Flush Door shutters.	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters	-
7	Balcony and Private Podium at First Floor Level & Terraces of 1BHK at 19th floor	Slip Shield/Anti Skid glazed Vitrified Tiles 600mm X 600mm on floors and matching skirting .	Exterior weather proof Premium Acrylic Emulsion smooth paint over a coat of primer & cement based putty	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	uPVC Door/Window with DGU Glass and Wire mesh shutters	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters	Stainless Steel Railing


GARG & ASSOCIATES
 110, Connaught Place
 NEW DELHI-110001
 GARGAN GARG
 CA-NO-19125498



S.N.	Details	Flooring	Wall finishes		Door	Windows/ Ventilators	Railing
	STILT FLOOR:						
13	Lift well & Pit	-	White wash on walls & ceiling .	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	As per Vendor	-	-
14	Entrance Lobby & Lift Lobby	Granite flooring & Vitrified Tile 600x1200mm in dado	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion smooth paint with primer	Exterior weather proof Texture cement based putty	uPVC Glazed Door sliding & casement doors as per drawings	uPVC Windows with Fly proof Wire mesh shutters	-
15	Fire & Electrical Room	Kota Stone flooring with matching skirting.	Cement base putty, 2 or more coats of Water proofing cement paint	Exterior weather proof Texture cement based putty	G. I Fire Check Door as per approved make	-	-
16	Staircases	Granite Flooring, single stone in riser and treads & Matching skirting. Treads shall be in Flamed Granite.	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion smooth paint with primer	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	G. I Fire Check Door in Staircase as per approved make	uPVC Windows with Fly proof Wire mesh shutters	Powder Coated M. S. Railing
17	Parking Area	75 MM Thk. Vacuum Dewatering Cement Concrete Flooring.	Cement base putty, 2 or more coats of Water proofing cement paint	All sides of External Columns and walls shall be applied with Exterior weather proof Texture paint over a coat of primer & cement based putty	-	Aluminium Lovers in Ventilation shafts	-
18	Lift Facia	-	-	Granite Cladding including SS cramps	-	-	-
19	Garbage Room	Kota Stone flooring with matching skirting.	Cement base putty, 2 or more coats of Water proofing cement paint	Exterior weather proof Texture cement based putty	MS frame & Shutter	-	-


GARG & ASSOCIATES
 48, REGAL BUILDING
 CONNAUGHT PLACE
 NEW DELHI-110001
 TEL: 011-26108000
 CA-NO.-9828499



CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION			
SCHEDULE D2C			
Elevators			
Sr. No.	DESCRIPTION	UNIT	QTY
1	Supplying, installing, testing and commissioning of 10 passenger (680 kg) (MRL) to 13 passenger (884 kg) (With MACHINE ROOM) lift having contract speed of 1.75 MPS serving different floors in the lift shaft as per CPWD specifications for electrical works (Lifts & Escalators Part - III, 2003) and technical data sheet enclosed. Two Year Annual Maintenance shall be included in quoted rates.		
1.1	Location of lifts: Blocks		
	Nos. of Passangers: 13		
	Speed 1.75 MPS		
	Floors - 23 (Double Basement+Stilt+20 Upper Floors)		
	Stops and opening - 23		
	Controller : AC variable voltage and variable frequency		
	Automatic rescue device complete with dry maintenance free batteries as required		
	Operation : Duplex selective collective without attendant.		
	Power - 415 V, 3 phase, 50 HZ, 4 wires- system		
	Type of doors		
	Car : Automatic Power operated center/side opening horizontal sliding stainless steel scratch proof doors in hairline finish. Mirror on rear wall		
	Landing doors: Automatic Power operated, center/side opening horizontal sliding stainless steel scratch proof doors in hairline finish.		
	A hand rail not less than 600 mm long at 900 mm above floor level to be fixed adjacent to control panel in the lift car.		
	Operation and maintenance of lift which include routine, preventive break down maintenance including repair/replacement of worn out items with minimum downtime and warranty & guarantee of repaired/replaced items for defect liability period as per maintenance schedule from the date of handing over of work.		
	Voice announcement system in the car	No.	4
1.2	Location of lifts: Blocks		
	Nos. of Passangers: 13		
	Speed 1.75 MPS		
	Floors - 24 (Double Basement+Stilt+20 Upper Floors+Terrace)		
	Stops and opening - 24		
	Controller : AC variable voltage and variable frequency		
	Automatic rescue device complete with dry maintenance free batteries as required		
	Operation : Duplex selective collective without attendant.		
	Power - 415 V, 3 phase, 50 HZ, 4 wires- system		
	Type of doors		
	Car : Automatic Power operated center/side opening horizontal sliding stainless steel scratch proof doors in hairline finish. Mirror on rear wall		


GARG & ASSOCIATES
 4E, REGAL BUILDING
 CONNAUGHT PLACE
 NEW DELHI-110001
 GARGAN GARG
 CA-No.-99/28499



Sr. No.	DESCRIPTION	UNIT	QTY
	Landing doors: Automatic Power operated, center/side opening horizontal sliding stainless steel scratch proof doors in hairline finish.		
	A hand rail not less than 600 mm long at 900 mm above floor level to be fixed adjacent to control panel in the lift car.		
	Operation and maintenance of lift which include routine, preventive break down maintenance including repair/replacement of worn out items with minimum downtime and warranty & guarantee of repaired/replaced items for defect liability period as per maintenance schedule from the date of handing over of work.		
	Voice announcement system in the car	No.	2
1.3	Location of lifts: Club Building (Machine Room Less Elevator)		
	Nos. of Passangers: 10		
	Speed 1.0 MPS		
	Floors - 4 (Double Basement+Stilt floor+ Terrace)		
	Stops and opening - 4- having 2 front opening and 2 rear openings		
	Controller : AC variable voltage and variable frequency		
	Automatic rescue device complete with dry maintenance free batteries as required		
	Operation : Duplex selective collective without attendant.		
	Power - 415 V, 3 phase, 50 HZ, 4 wires- system		
	Type of doors		
	Car : Automatic Power operated center/side opening horizontal sliding stainless steel scratch proof doors in hairline finish. Mirror on rear wall		
	Landing doors: Automatic Power operated, center/side opening horizontal sliding stainless steel scratch proof doors in hairline finish.		
	A hand rail not less than 600 mm long at 900 mm above floor level to be fixed adjacent to control panel in the lift car.		
	Operation and maintenance of lift which include routine, preventive break down maintenance including repair/replacement of worn out items with minimum downtime and warranty & guarantee of repaired/replaced items for defect liability period as per maintenance schedule from the date of handing over of work.		
	Voice announcement system in the car	No.	1

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION

SPECIFICATION FOR 10PASSENGER'S (MRL) &13 PASSENGER'S (WITH MACHINE ROOM) ELEVATOR

SCHEDULE D2Ca

Type of Lift	10 Passenger's Lifts (MRL) in Club & 13 Passenger's Lifts (With Machine Room) in Residential Blocks
	m
Number of lifts required	7 Nos.
Load: Number of persons	13 Passengers (1020 Kg.) for Residential Blocks, 10 Passengers (680 Kg.) for Club building
Rated Speed of Travel	1.75 MPS FOR RESIDENTAIL BLOCKS, 1.0 M FOR CLUB BUILDING
Travel in meters	Block - 2 Nos. : 70.65mtr (2B+Stilt+20+Terrace) Block - 4 Nos. : 67.65mtr (2B+Stilt+20) Club Building : 13.90mtr (2B+GF +Terrace)
Number of floors served	Block -2Nos : 24(2B+Stilt+20+Terrace) Block -4No : 23 (2B+Stilt+20) Club Building : 4(2B+GF+Terrace)
Inside size of lift well (Raw size)	1900mm x2500 mm for 13 Passengers in blocks 1900mm x2100 mm for 10 Passengers in Club
Pit depth	1600 mm or as per lift manufacturer whichever is more.
Head room	As per lift manufacturer/drawings
Clear inside size of lift car	As per Code
Dimension of lift machine room	N. A. for MRL lifts/ Machine room as per Lift Vendor
Position of counter weight	As per Lift Manufacturer requirement
Type of control	Microprocessor based AC variable voltage variable frequency

Type of operation	Duplex selective- collective operation without attendant.
Car entrance door	900 mm front side only in towers. In club 2 doors are in front side in basements and 2 doors are in rear side at upper floors.
Size of Door	900 mm x 2100 mm
Type of doors	Power operated Automatic, Centre/side opening, SS door in hairline finish.
Door Operation	ACVF door operation.
Type of machine	Gearless Machine.
Location of machine	Inside the hoist well/Machine room.
Car open in front only or open	In front only
Type of signal system	Digital floor position indicator in the car and at all landings (to be provided above the car/landing doors). The indicator will be dot matrix rolling type.
	Travel direction indicator in the car and at all landings. (to be provided above the car/landing doors). The indicator will be dot matrix type.
	Over load warning audio & visual indicator, inside the car (lift should not start on overload)
	Battery operated alarm bell and emergency light.
	Full Car operation panel with fade proof luminous buttons in car and with intercom. SS hand rail at three side of Lift Car
	Luminous hall buttons at all landings, the hall buttons shall be SS metallic type.
	Fireman's switch at ground floor Close loop controller.
Landing entrance	SS hairline scratch proof panel center operating horizontal sliding doors (automatic) with infrared protection.
Location of landing entrance in different floors	All doors on the same side
Number	As per lifts
Size	900 mm x 2100 mm,
Type of doors	Centre/side opening horizontal sliding stainless steel doors in hairline finish scratch proof.

Door operation	ACVF door operation
Lift in use/lift out of order sign	A suitable box above the LED illuminated bilingual (in Hindi & English) signs of “Lift out of order “ coming up simultaneously at all floors
Electric supply	Power : - 415 V, AC, 3 phase, 50 HZ, 4-wire system
	Lighting: 230 V, AC, 50 HZ
Neutral wire for control circuits	Yes
Counter Weight	Cast Iron
Hoist Rope	Round stranded steel rope
Car Design / Exclusive	<ul style="list-style-type: none"> • Car Panels: Made of Hairline Stainless Steel scratch proof, Car enclosure body of SS 304 (16 gauge) • Floor: Black Granite Flooring • Lighting: Diffused fluorescent lighting in the ceiling • Braille inscriptions on car buttons • Car Operating Panel: Unique telephone keypad type • Ceiling : SS false ceiling in mirror finish • Mirror on rear side car wall
Other Features	<ul style="list-style-type: none"> • Call registration in car and at all landings. • Digital floor position indicator in car and all floors. • Emergency Light and alarm • Intercom from car to Guard/Security Room& machine room including wiring etc complete. • Infra red Door sensors having 132 beams. • One no. fan in ceiling, which is put on when lift in operation. • Pit ladder shall be provided. • Up Down (visual) Floor announcement indicator with single stroke gong at all landing. • Hooter/Alarm to be installed in Central Control Room/Security Gate with switch for the same inside the Car. • Voltage stabilizer inbuilt. • CCTV in the car, connected with Control room at GF • Auto Rescue Device
AMC	<ul style="list-style-type: none"> • Two years AMC shall be included in the quoted rates.



CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
INTERNAL PLUMBING FOR RESIDENTIAL BLOCKS	
SCHEDULE D2D	
S. NO.	Description
	Core cutting of required size with its filling with epoxy grout and waterproofing after fixing the pipes is included in the scope of work.
	In Cold water supply- CPVC pipes shall be used inside the building and GI pipes shall be used in shafts and terrace area. In Hot water supply with Insulation- CPVC pipes shall be used inside the building & shafts and GI pipes shall be used in terrace area.
	All the core cuts/cutouts for pipes shall be sealed with Fire seal/Promoseal.
1	SANITARY FIXTURES
1.1	Supply, fixing, testing and commissioning White Colour vitreous china wall hung European type WC with 'P' trap straight/offset type flexible single body push fit type WC - Connection socket with lip seal and body made of PP with C.P. bolts, nuts, C.I. chair or other hanging arrangement, with solid bakelite seat and slow falling cover, C.P. brass hinges rubber buffers with accessories, C.I./M.S. brackets painted with two coats of enamel paint of approved shade over a coat of primer. C.P. brass screws, including cutting and making good the wall and floors wherever required.
1.2	Providing, fixing, testing & commissioning of Ceramic cistern-Dual Flush for back to Wall Hung WCs for standard Height execution front flush, Capacity of 10 Litres with continuous adjustable short flush vol. of approx 3-4Ltrs or a continuously adjustable full flush volume of 6-10 Ltrs.) suitable for mechanical or Bowden wire actuation technology comprising of corner valve (Gun Metal), premounted water supply with 1/2 female thread, flushing pipe bow, flushing pipe extension, fixing material, without actuator plate and assembly including fixing frame, fixing set complete, providing protection cover over cistern, Body covered with Anti sweat thermocol cover cutting and making good the walls wherever required.
1.3	Providing and fixing Wash basin with C.I. brackets, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require with CP bottle trap and basin size as under:
1.3.1	White Vitreous China Oval Shape Under Counter Wash basin size 536x435 mm
1.4	Providing and fixing Stainless Steel A ISI 304 (18/8) Kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug, 40 mm CP waste grating with PVC flexible waste pipe including painting of fittings and brackets, cutting and making good the walls wherever required :
1.4.1	Kitchen sink double bowl without drain board of size 510 x 1145 & bowl depth 250 mm
1.5	Providing & fixing C.P. Brass health faucet for ablution with 1 meter long PVC tube, hand shower, couplings, wall hook and other accessories.
1.6	Providing and fixing C.P. brass, bib cock of approved quality conforming to IS : 8931
1.6.1	15 mm nominal bore
1.7	Providing and fixing C.P. brass angle valve for basin mixer, Sink mixer, RO point, geyser points and health faucet etc of approved quality conforming to IS:8931 a) 15 mm nominal bore
1.7.1	15mm nominal bore
1.8	Providing & Fixing C.P. brass single lever / single hole basin mixer with spout of required size with 450mm long copper connection pipe and brass Nuts, wall flanges including cutting and making good the walls wherever required.
1.9	Providing, & Fixing C.P. brass single lever /single hole sink mixer with swinging casted spout, counter/table mounted, wall flanges & copper connection complete including cutting and making good the walls wherever required.

S. NO.	Description
1.10	Providing and fixing C. P. Single lever Concealed diverter with exposed parts, CP Over head shower rod and shower head, C.P. bath spout, CP Hand shower with connection pipe & wall bracket and wall flanges including cutting and making good the walls where required. (In All Toilets)
1.11	Providing and fixing C.P brass Two way bib cock of approved quality conforming to IS standards and weighing not less than 810 gms. (For Washing Machine)
1.12	Providing and Fixing of Braided Hoses for Connection to Geyser, Wash basin, Sink and Flushing Cistern etc
1.13	Providing & Fixing S.S. (304) Double Coat hook / robe hook with necessary SS screws.- 2 nos for each toilet
1.14	Providing and Fixing of SS Towel Rail with necessary SS screws.
1.15	Providing and Fixing of SS Soap Dish with necessary SS screws.
1.16	Providing and fixing stainless steel jali (grating) without hole for waste pipe for floor trap & floor drain.
a)	Size 125mm dia flat cover matt finish
b)	Size 125mm dia cockroach trap for kitchen (With hole for pipe)
1.17	Providing and fixing of 750 mm x 600 mm beveled edge Mirror of Modi guard or equivalent, mounted on BWP Ply/hardboard and Aluminium beading min 40mm wide fixed with necessary SS screws and washers complete.
1.18	Providing & Fixing CP Toilet paper holder fixed with necessary SS screws and washers complete.
1.19	Providing and fixing Stainless Steel (SS) liquid soap container of standard shape with bracket of the same materials with snap fittings of approved quality and colour.
1.20	Providing and Fixing of 2 nos. 32mm dia Stainless Steel-304, Vertical Swing Type Handicap Grab bars in one toilet per flat.
1.21	Providing & Fixing Disabled Folding Seat Frame & Mounting Bracket of Material: 18-8 S, Type-304, Stainless Steel, Application : Shower Area, Sizes : 457mm X 371mm Seat Colour: Ivory, Water Resistant complete in One toilet per Flat
2	INTERNAL WATER SUPPLY SYSTEM
2.1	Providing and fixing CPVC pipes complete with fittings including trenching and refilling etc as follows:
2.1.1	Providing and fixing CPVC pipes CTS-SDR 11, class-1 CPVC Pipes (pressure rating 28 kg/cm ² at 23oC and 7 kg/cm ² at 82oC) confirming to IS : 15778-2007, ASTM D-2846, complete including trenching and refilling etc. complete with Fittings ie tees, elbows, sockets, clamps etc in all respects and as per instructions of the CGEWHO/Architect.
2.1.1.1	20mm dia
2.1.1.2	25mm dia
2.1.1.3	32mm dia
2.1.1.4	40mm dia
2.2	Providing, fixing chlorinated polyvinyl Chloride (CPVC) pipes CTS-SDR 11, class-1 CPVC Pipes (pressure rating 28 kg/cm ² at 23oC and 7 kg/cm ² at 82oC) confirming to IS : 15778-2007, ASTM D-2846, having thermal stability for hot and cold water supply including all CPVC plain and brass threaded fittings including fixing the pipes 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 CGEWHO/Architect.
	Concealed work , including cutting chases and making good the walls etc.

S. NO.	Description
2.2.1	15 mm nominal outer dia Pipes
2.2.2	20 mm nominal outer dia Pipes
2.2.3	25 mm nominal outer dia Pipes
2.3	Providing, fixing chlorinated polyvinyl Chloride (CPVC) pipes CTS-SDR 11, class-1 CPVC Pipes (pressure rating 28 kg/cm ² at 23°C and 7 kg/cm ² at 82°C) confirming to IS : 15778-2007, ASTM D-2846, having thermal stability for hot and cold water supply including all CPVC plain and brass threaded fittings including fixing the pipes with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of CGEWHO/Architect. (In shafts CPVC schedule-40 pipe shall be used)
	Internal work & exposed on wall
2.3.1	15 mm nominal outer dia Pipes
2.3.2	20 mm nominal outer dia Pipes
2.3.3	25 mm nominal outer dia Pipes
2.3.4	32 mm nominal outer dia Pipes
2.3.5	40 mm nominal outer dia Pipes
2.4	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, i/c cutting and making good the walls etc.
	Internal work - Exposed on wall/Terrace
2.4.1	20 mm dia nominal bore
2.4.2	25 mm dia nominal bore
2.4.3	32 mm dia nominal bore
2.4.4	40 mm dia nominal bore
2.4.5	50 mm dia nominal bore
2.4.6	65 mm dia nominal bore
2.4.7	80 mm dia nominal bore
2.4.8	100 mm dia nominal bore
2.4.9	150 mm dia nominal bore
2.5	Providing and fixing 13mm thick nitrile rubber insulation with Aluminium Foil on hot water supply lines from Solar heater to Tap in the toilet/Kitchen
2.5.1	15 mm dia nominal bore
2.5.2	20 mm dia nominal bore
2.5.3	25 mm dia nominal bore
2.5.4	32 mm dia nominal bore
2.5.5	40 mm dia nominal bore
2.5.6	50 mm dia nominal bore
2.6	Providing & fixing full way lever operated forged brass ball valve of brass body with forged brass hard chromeplated steel ball tested to a pressure not less than 15 Kg / sqcm with threaded / flanged joints complete with nuts, bolts, gaskets, washers etc. as per direction of CGEWHO/Architect.
2.6.1	15 mm dia. Nominal bore
2.6.2	20 mm dia. Nominal bore
2.6.3	25 mm dia. Nominal bore
2.6.4	32 mm dia. Nominal bore
2.6.5	40 mm dia. Nominal bore
2.6.6	50 mm dia. Nominal bore
2.6.7	65 mm dia. Nominal bore
2.6.8	80 mm dia. Nominal bore
2.6.9	100 mm dia. Nominal bore
2.7	Providing and fixing Forged Brass pressure reducing valve with strainer delivering desired rate of flow with flanged connection. The complete system is tested to a pressure not less than 10 Kg / Sq.cm and suitable to reduce the pressure upto 1 Kg/Sq.cm) including flanges / unions, nuts, bolts and washers complete as required.
2.7.1	25 mm dia
2.7.2	32mm dia
2.7.3	40mm dia

S. NO.	Description
2.7.4	50mm dia
2.7.5	65mm dia
2.8	Making connection of G.I. distribution branch with G.I. main of following sizes by providing and fixing tee, including cutting and threading the pipe etc. complete :
2.8.1	25 to 40 mm nominal bore
2.8.1	50 to 80 mm nominal bore
2.9	Providing and fixing G. I. Union in G. I. pipe including cutting and threading the pipe and making long screws etc. complete (new work)
2.9.1	15 mm nominal bore
2.9.2	20 mm nominal bore
2.9.3	25 mm nominal bore
2.9.4	32 mm nominal bore
2.9.5	40 mm nominal bore
2.9.6	50 mm nominal bore
2.9.7	65 mm nominal bore
2.10	Providing and fixing G. I. Flange Connection in G. I. pipe including cutting and threading the pipe and & fixed in flange plate with necessary teflon tape etc. complete
2.10.1	50 mm nominal bore
2.10.2	65 mm nominal bore
2.10.3	80 mm nominal bore
2.10.4	100 mm nominal bore
2.11	Providing & fixing Auto Air vent for cold water supply risers, suitable for pressure not less than 15 Kg/Sq.cm.
2.11.1	15 mm dia
2.11.2	20 mm dia
2.11.3	40 mm dia
2.11.4	50 mm dia
2.12	Hydropneumatic Booster Pump at Terrace Level for Top Four Nos. Floors) Providing fixing and commissioning suitable complete composite hydropneumatic system consisting of horizontal/vertical multistage centrifugal pump having stainless steel (SS304) impellers, shaft and housing, with single mechanical seal and pressurised tank of necessary capacity, complete with all standard accessories including pressure switch, pressure gauges, non-return & isolating valves, with necessary protection and operational devices i.e alternate pumping operation and shut-off during dry running conditions etc. with suitable electrical motor to be operated on 210/220 OR 400/440 volt 50 cycle AC supply, suitable for following duty and with total no. of pumps - 2 nos.(1 working+1standby) complete with Control Unit Panel, manifolds & chassis, as per the approval of CGEWHO/Architect. No. of Pumps/Set : 2(1 Working +1 stand by) Each tower Capacity : app. 120LPS per pump Head : 12 m
2.13	Cutting holes up to 30 X 30 cm in walls including making good the same:
2.14	Constructing brick masonry chamber 300 x 300 x 500 mm, inside with F.P.S. brick work in cement mortar 1: 4 (1 cement : 4 coarse sand) for Stop Cock , with C. I. surface box 100 x 100 x 75 mm (inside) with hinged cover fixed in cement concrete slab 1:2:4mix (1cement : 2 coarse sand:4 grade stone aggregate 20mm nominal size); necessary excavation, foundation concrete 1:5:10 (1 cement :5 fine sand: 10 graded stone aggregate 40mm nominal size) and inside plastering with cement mortar 1 : 3 (1 cement : 3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design
2.14.1	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5

S. NO.	Description
3.6	Providing, fixing, jointing and testing in position of ISI marked UV stabilized UPVC pipes for rain water disposal, Type-B as per IS : 13592 suitable for rubber ring joints, including all neccessary specials and fittings (confirming to IS:14735) i.e. bends, tees, junctions (with or without doors), reducers, couplers, expansion joints / bellows, cowels, clamps, rubber rings, MS gratings over pipes of bell mouth construction with epoxy painting etc. fixing at wall/ ceiling/ floor level supported by clamp & hangers etc. in concealed / inside duct / under floor / external work etc. including chase cutting as required, excavation and back filling in all kind of soils, suspended from floor under false ceiling or embedding the pipes laid under floors / building in 75 mm. around 1:2:4 cement concrete (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including cost of shuttering for proper completion of the work, breaking and making good the walls and floors etc. after pipes have been duly laid and tested. The rubber ring shall confirm to IS:5382.
	The Pipes will be supported with threaded G I rods & clamps on 50x50x5 mm slotted angle. The cost will include all support arrangements. The work includes commissioning of all pipes lines as per drawings and specifications and as directed by engg-in-charge at site.
3.6.1	160 mm dia (Wall Thickness - 4.0 to 4.6 mm)
3.6.2	110 mm dia (Wall Thickness - 3.2 to 3.8 mm)
3.6.3	90 mm dia (Wall Thickness - 3.2 to 3.8 mm)
3.7	Providing & fixing of PVC spout including cutting and making good the walls and floors etc. and connected with PVC stack for all floors till connection with drain at GF as required.in each sunken Toilet & Kitchen
3.7.1	a) 25 mm dia
3.8	Providing and fixing 25 mm dia PVC pipes as shown in drawings with required fittings all complete for AC Drain which shall be further connected in nearest floor trap or drain at GF.
3.9	Proving and casting the thrust block at the lowest bend of SWR stack in cement concrete 1:2:4 and duly platsred nad finish as required.

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION				
INVENTORY FOR INTERNAL PLUMBING WORKS				
SCHEDULE D2E				
S.No.	Material / Item	Brand & Manufacturer/ Supplier (Prior approval from Client/Architect is mandatory)		
	PLUMBING LOW SIDE	MODEL No. or Equivalent for Dus and other Buildings	MODEL No. or Equivalent for Dus and other Buildings	MODEL No. or Equivalent for Dus and other Buildings
1	Vitreous china wall mounting water closet	KOHLER	JAQUAR	EURONICS
	Model No.	Odeon Cat. No: K-17661K-S-0 Model or equivalent, Complete set with exposed cistern, fitting, plastic outlet connector and seat cover (quite close)	Continental Series Cat. No: CNS-WHT-363SPPZ Complete set with fitting and seat cover (soft closing) Dual flush Cistern.	
1a	Exposed Cistern	KOHLER	JAQUAR	
		As per Company, compatible with the seat	As per Company, compatible with the seat	
2	Wash basin with C.I. brackets,	KOHLER	JAQUAR	
	Under Counter Wash Basin Model	Caxton - Cat, No. K-2211IN-0	CNS-WHT-701	
3	Kitchen Sink (Stainless Steel A	Jayna Sink	Nirali	
	Model No. for Du's	DBF 02 (DX)	Graceful Glory NG (Big 10")	
4	C.P. brass, bib cock	KOHLER	JAQUAR	
	Model No.- 2 Two way bib cock	July- K-16094 IN-4-CP	FUS -CHR- 29041	
	Model No.- Bib cock	July- K-16093 IN-4-CP	FUS - CHR-29037	
5	C.P. S.S. Coat hook / robe hook	KOHLER	JAQUAR	EURONICS
	Model No.	K-5635IN-CP	ACN-CHR- 1161N	EC02-CP
6	Toilet paper holder	KOHLER	JAQUAR	EURONICS
	Model No.	K-5633IN-CP	ACN- CHR-1153S	ACC09
7	Liquid soap container	KOHLER	JAQUAR	EURONICS
	Model No.	K-10712D-CP	ACN-CHR-1135N	ES09
8	Stainless steel jali (grating)	Chilly	Vijay	EURONICS
	Model No.	SK-R- 150 with lock option	1286 & 1262	EFG08-55C
	Cockroch Trap Model No.	CCT-RFC-138 with lock option		EFG0C7
9	Single lever basin mixer	KOHLER	JAQUAR	
	Model No.	K-29928IN-4ND-CP	FUS-CHR-29023B	

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NEW DELHI-110021
GARGAN, GARGAN
CA.No.-89/25498



Contractor

Garg and Associates

CGEWHO

S.No.	Material / Item	Brand & Manufacturer/ Supplier (Prior approval from Client/Architect is mandatory)			
	PLUMBING LOW SIDE	MODEL No. or Equivalent for Dus and other Buildings	MODEL No. or Equivalent for Dus and other Buildings	MODEL No. or Equivalent for Dus and other Buildings	MODEL No. or Equivalent for Dus and other Buildings
10	Sink Mixer Model No.	KOHLER CUFF K-37316IN-4-CP	JAQUAR FLR-CHR-5179 B		
11	C.P Angle Valve Model No.	KOHLER JULY K-80154IN-4AV-CP	JAQUAR FUS-CHR-29053		
12	Towel Rail Model No.	KOHLER K-5630IN-CP	JAQUAR AKP-CHR-35711PS	EURONICS ACC04	
13	Braided Hoses Model No.	KOHLER AS PER BRAND RECOMMENDATION	JAQUAR ALD -CHR- 803AB		
14	Soap Dish Model No.	KOHLER K-5634IN-CP	JAQUAR ACN-CHR-1131N	EURONICS ACC01	
15	Shower Concealed Diverter, Mixer, Overhead Shower and Bath Spout Model No.	KOHLER	JAQUAR		
		Concealed Diverter K-99924-IN-CP, Exposed Part of Concealed Diverter K-99926 IN-4FP-CP, Bath Spout K-99060IN-CP, Overhead Shower Arm & Shower K-23657IN-CP and Hand Shower K-37432IN-CP with connection pipe, nuts and wall bracket K-9040-IN-CP.	Concealed Diverter ALD-783N, Exposed Part of Concealed Diverter (Solo FUS-29783NK), Bath Spout Fusion SPJ-CHR-29429, Overhead Shower Arm SHA- CHR-483, Overhead Shower OHS-CHR-1789 and Hand Shower HSH-1717 with connection pipe SHA-549D12 of 1.5 mtr length with nuts and wall bracket SHA-555..		
16	Bottle Trap Model No.	KOHLER K-7314IN-CP	JAQUAR ALD- CHR-769	EURONICS EBT12-CP	
17	Waste Coupling Model No.	KOHLER K-45432IN-CP	JAQUAR ALD -CHR-709	EURONICS EWC02-CP	
18	Health Faucet Model No.	KOHLER K-12925IN-CP	JAQUAR ALD -CHR-587	EURONICS EHF30	
19	Vertical Swing Type Handicap Grab bars		JAQUAR	EURONICS	
			WAC-SAP-BG0800CSN	EGR S02	
20	Disabled Folding Seat Frame & Mounting Bracket			EURONICS	
				EDS01	

Note: The contractor shall procure all materials from a single brand. The use of materials from different brands is strictly prohibited and will not be accepted.


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 GARGAN, GARG
 CA.No.-98/25499



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CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
INTERNAL ELECTRICAL WORKS FOR RESIDENTIAL BLOCKS	
SCHEDULE D2F	
Sl. No.	DESCRIPTION
A	INTERNAL WIRING
	Point wiring in PVC conduit, with modular type switch :-
1	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed Medium class PVC conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.
1.1	Group B
2	Rewiring for light point/fan point/exhaust fan point/ call bell point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable and 1.5 sq. mm FRLS PVC insulated copper conductor single core cable as earth wire in existing surface/ recessed steel/PVC conduit including dismantling as required.
2.1	Group B
	Twin Control Point wiring in PVC conduit, with modular type switch :-
3	Rewiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable and 1.5 sq.mm FRLS PVC insulated copper conductor single core cable as earth wire in existing surface/recessed steel/PVC Conduit including dismantling as required.
	Power plug wiring in PVC conduit (2 x 4 Sq.mm.) :-
4	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed Medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.
	Circuit / Sub main wiring in PVC conduit :-
5	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed Medium class PVC conduit as required.
5.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire.
5.2	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire.
5.3	2 X 4 sq. mm + 1 X 4 sq. mm earth wire.
5.4	2 X 6 sq. mm + 1 X 6 sq. mm earth wire.
5.5	2 X 10 sq. mm + 1 X 6 sq. mm earth wire
5.6	2 X 16 sq. mm + 1 X 6 sq. mm earth wire
5.7	4 X 6 sq. mm + 2 X 6 sq. mm earth wire
5.8	4 x 10 sq.mm. + 2 x 6 sq.mm. earth wire
5.9	4 X 16 sq. mm + 2 X 6 sq. mm earth wire
6	Wiring including termination for the first light points controlled by MCB in distribution board (Cost of MCB taken separately) with 2x1.5 sq.mm. PVC insulated copper conductor FRLS wires of 1100 Volts grade in concealed/exposed PVC conduits and 1.5 sqmm. earth wire.
7	Same as above but LOOP POINT i.e. wiring of point looped from first point with 2x1.5 sq.mm. PVC insulated copper conductor FRLS wire of 1100 volt grade in concealed/exposed PVC conduits and 1.5 sqmm earth wire
	S/F light plug point modular type accessories :-
8	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.
	S/F power plug point modular type accessories :-
9	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.
10	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25A modular socket outlet and 25A modular SP MCB, "C" curve including connection, painting etc. as required.

Sl. No.	DESCRIPTION
11	Supplying and fixing 20 A, 240 V, SPN Industrial type socket outlet, with 2 pole and earth, metal enclosed plug topalongwith 20 A "C" curve, SP, MCB, in sheet steel enclosure, on surface or in recess, with chained metal cover for the socket outlet and complete with connections, testing and commissioning etc. as required.
	S/F modular type electronic fan regulator :-
12	Supply and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.
	S/F modular type blanking plate :-
13	Supply and fixing modular blanking plate on the existing modular plateon the existing modular plate & switch board excluding modular plate as required.
B	SUB HEAD-II:DISTRIBUTION BOARDS & MCB's: All DB shall be Fire resistant.
14	Supplying and fixing 5 amps. to 32 amps. rating, 240 volts 'C' series, miniature circuit breaker (MCB) suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.
14.1	Single pole
14.2	Double pole
14.3	Triple pole
14.4	Triple pole and neutral
15	Supplying & fixing single pole, blanking plate in the existing MCB DB complete etc. as required.
16	Supplying and fixing following rating, double pole , 240 volts, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.
16.1	40 amps.
16.2	63 amps.
17	Supplying and fixing following rating, four pole , 415 volts, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.
17.1	40 amps.
17.2	63 amps.
17.3	100 amps.
18	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB),having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.
18.1	25 amps.
18.2	40 amps.
18.3	63 amps.
19	Supplying and fixing following rating, four pole , (three phase & neutral) 415 volts, residual current circuit breaker (RCCB), having a sensivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required :
19.1	25 amps.
19.2	40 amps.
19.3	63 amps.
20	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess,complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)
20.1	6 way , Double door
20.2	8 way , Double door
20.3	12 way , Double door
20.4	16 way, Double door
21	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel MCB distribution board, 415 V on surface /recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required (But without MCB / RCCB / Isolators).
21.1	4 way (4 + 12), Double door
21.2	6 way (4 + 18), Double door
21.3	8 way (4 + 24), Double door
21.4	12 way (4 + 36), Double door

Sl. No.	DESCRIPTION
22	Supplying, fixing, connecting, testing and commissioning of following rating, ISI marked (IS 8828) 240 / 415 volts, 10 KA, Miniature Circuit Breaker (MCB) of single / double / three / four poles in the existing MCB DB or in existing MS enclosure complete in all respects.
22.1	40 Amp. DP MCB
22.2	63 Amp. DP MCB
22.3	25 Amp. FP MCB
22.4	40 Amp. FP MCB
22.5	63 Amp. FP MCB
C	SUB HEAD-III:CONDUITING AND CABLING:
	S/F MODULAR BOXES, BASE & COVER PLATE :-
23	Supplying and fixing following size / modules, GI box along with modular base & cover plate for modular switches in recess etc as required
23.1	1 Module or 2 Module (75 mm x 75 mm)
23.2	3 Module (100 mm x 75 mm)
23.3	4 Module (125 mm x 75 mm)
23.4	6 Module (200 mm x 75 mm)
23.5	8 Module (125 mm x 125 mm)
23.6	12 Module (200 mm x 150 mm)
24	Supplying and fixing following Modular Base & cover plate on existing modular metal box etc as required.
24.1	1 Module or 2 Module
24.2	3 Module
24.3	4 Module
24.4	6 Module
24.5	8 Module
24.6	12 Module
	S/F MODULAR TYPE SWITCH / SOCKET :-
25	Supplying and fixing following modular switch/ socket on modular base & switch box including connections but excluding modular plate etc. as required.
25.1	5/6 A Switch
25.2	2-Way 5/6 A Switch
25.3	15/16/25 A Switch
25.4	3 pin 5/6 A Socket outlet
25.5	6 pin 15/16 A Socket outlet
25.6	Telephone socket outlet
25.7	TV antenna socket outlet
25.8	Bell Push
26	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required :
26.1	20 mm.
26.2	25 mm.
26.3	32 mm.
27	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.
27.1	25 mm.
27.2	32 mm.
28	Supplying and drawing following pair, 0.5 sq.mm. FRLS PVC insulated annealed copper conductor, unarmoured telephone cable in the existing surface / recessed steel/ PVC conduit as required.
28.1	2 Pair
29	Supplying and fixing 3 pin, 5A Ceiling rose on the existing junction box/ wooden block including connections etc. as required.
30	Supplying and fixing Call bell/ Buzzer suitable for Single phase, 230V complete. as required.

Sl. No.	DESCRIPTION
31	Supplying and drawing of UTP 4 pair Cat-6 LAN cable in the existing surface/ recessed Steel/PVC conduit as required.
31.1	1 Run of Cable
32	Providing & Fixing of modular plate type white RJ 45 CAT 6 Data outlet / information outlets on 1.0 mm tk G.I. Switch control boxes, with cover plate, grid plate, screws, etc with connections as required.
32.1	1 nos. RJ 45 Data Outlet
D	SUB HEAD-IV: TELEPHONE & TELEVISION SYSTEM
33	Supply, installation, testing and commissioning of enhanced category 5 patch panels suitable to meet or exceed TIA and ISO component performance requirement, universal wiring may be terminated to T568A or T568B standards with lables and suitable for mounting on to 19" communication rack. The complete formation shall be suitable for 480 nodes.
33.1	6 ports
34	Supply, installation, testing and commissioning of enhanced category 5 patch cords exceeding Category 5e performance standards, 4 pair stranded UTP, 24 AWG conductors, non plenum, size 7 ft. and 10 ft.
35	Supply, installation, testing and commissioning of enhanced category 5e mounting cords 7ft. both side factory fitted RJ 45 connector.
36	Providing, fixing, connecting & testing of Krone box (Telephone Tag Block) in a thermoplastic, IP 65 (weather proof) enclosure, internally embedded gasket, anti corrosive, insulated and shock proof with provision for cable through IP 65 glands complete in all respects.
36.1	10 pair krone (size 136*253*115 mm)
36.2	150 pair krone (size 217*253*115 mm)
37	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.
38	Supply, installation, testing and commissioning of EPABX System Non-Blocking, ISDN / ATM, Initially Equipped with : `Trunk Side: Total i) (64 Channel) PRI Line Interface ii) 08 P&T LineExtension side: Total Extension : =512 iii) 32 Digital Extensions interface
39	Providing & Fixing of G. I. TV / Tel junction Box suitable for modular plate type switches (Approx size : 200 x 75 x 50 mm) complete in all respect with cover plate, grid plate, screws, blank plates etc as required.
40	Supply, Installation, Testing & Commissioning of on line UPS as per following details :- Technology : Micro processor based controls, True on line, Double conversion type, should have cold start facility. Input :- (mains / local D G set compatibility) a) Voltage : 230 V / 1 Phase b) Voltage Variation : - 20% to + 20% c) Input Frequency : 50 Hz. d) Frequency Variation : + 10% Output :- a) Voltage : 230 V / 1 Phase b) Voltage Variation : + 1% c) Frequency Variation : 50 Hz. + 0.1% Overall Efficiency : > 90% Charger : Should have built in charger to suit system requirement. Battery type : Sealed Maintenance Free - SMF Back-up time : 20 Min. with SMF batteries Rating : 2 KVA

Sl. No.	DESCRIPTION
	Fiber Direct to Home Equipments
41	Supplying & fixing ONT box (400X300mm) of steel sheet on surface/ recess complete with powder painted including earthing etc. as required.
42	Supply and fixing of following sizes of ISI marked PVC heavy duty conduit alongwith the accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.
42.1	25 mm dia 2 Nos from ONT box to LV shaft with steel fish wire
E	SUB HEAD-V:MISCELLANEOUS
43	Providing and fixing circular/ Hexagonal cast iron or M.S. sheet box for ceiling fan clamp, of internal dia 140 mm, 73 mm height, top lid of 1.5 mm thick M.S. sheet with its top surface hacked for proper bonding, top lid shall be screwed into the cast iron/ M.S. sheet box by means of 3.3 mm dia round headed screws, one lock at the corners. Clamp shall be made of 12 mm dia M.S. bar bent to shape as per standard drawing.
F	SUB HEAD-VI:INTERNAL LIGHTING FIXTURES & FANS
	SUPPLY OF LIGHTING FIXTURES
44	Supply of surface, wall / ceiling mounting LED T5 / T8 Tube Light fixture having Powder coated die cast aluminium housing with heat sink, PF above 0.9, efficacy above 90 lm/watt, pre wired with constant current LED driver set, suitable for 1 phase, 240 V, 50 Hz, IP 20 complete in all respects. (colour temperature 3000oK / 4000oK / 6500oK - to be confirmed before supply)
44.1	1x22 watt LED T5 / T8 Tube Light fixture (1200 mm long)
44.2	2x22 watt LED T5 / T8 Tube Light fixture (1200 mm long)
45	Supply of recess / surface, round / square, ceiling mounting LED Light fixture having Powder coated die cast aluminium housing with heat sink, glare free diffuser with uniform light distribution, PF above 0.9, efficacy above 90 lm/watt, pre wired with constant current LED driver set, suitable for 1 phase, 240 V, 50 Hz, IP 20 complete in all respects. (colour temperature 3000oK / 4000oK / 6500oK - to be confirmed before supply)
45.1	15watt LED DOWN LIGHT
45.2	9W MIRROR LIGHT
45.3	1X12W WALL MOUNTED BRACKET LIGHT
46	Supply of surface mounted bulk head fixtures with LED lamp complete as per standard item with copper wiring lamps as required as per the standard catalogue item.
46.1	9 watt LED Bulk Head
47	Supply of Aviation obstruction light with LED lamp, toughened clear glass, with all accessories as per standard item.
E	LIGHT FIXTURES & FAN
i.	All the lighting fixtures and fans samples must be gotten approved from the Owner/ Architect/ PMC before ordering on the Sub-vendor and before supply.
	All the ceiling fans shall be complete with down rods of required length. The colour and shade of fans shall be gotten approved by the Owner / Architect / PMC.
	All Exhaust fans shall be complete with frames, colour and shade shall be gotten approved from Owner / Architect / PMC.
	All the fixtures / fans shall be of good quality and technically safe as per approved standard and codes.
	All Light fittings/fixture,Fan, except in dwelling units are to be provided by the contractor.
	All exhaust fans including kitchen and toilets in dwelling units are to be provided by the contractor.
	SUPPLY OF CEILING & EXHAUST FANS
48	Supply of AC 230/250 volts, 50 HZ energy efficient ceiling fan with standard down rod, blades, 2 nos. caps etc. complete
48.1	1200 mm sweep (BEE 5Star)
48.2	900 mm sweep (BEE 5Star)
49	Supply of AC 230/250 volts, 50 HZ exhaust fans including providing nuts, bolts, mounting frame and other accessories etc. complete
49.1	300 mm sweep 900 rpm (BEE 5Star)

Sl. No.	DESCRIPTION
	ERECTION OF LIGHTING FIXTURES AND FANS
50	Installation, testing and commissioning of pre-wired, fluorescent fitting / compact fluorescent/light fitting of all types , complete with all accessories and tubes etc. directly on ceiling / wall, including connection with 1.5 sq. mm. FRLS PVC insulated, copper conductor, single core cable and earthing etc. as required.
50.1	Recess / surface, round / square, ceiling mounting LED Light fixture
50.2	Surface, wall / ceiling mounting LED T5 / T8 Tube Light fixture
50.3	Surface mounted bulk head fixtures with LED lamp
51	Supply, Installation, testing & comisioning 10 W LED (RUGBYGENXFTS10WLED865SSYMBOPC) Bulkhead light similar to Havells or equivalant as approved in Lift Wells and shafts.
52	Aviation obstruction light with all accessories, fitted on 32 mm dia class B, G I Pipe fixed on the roof as required and as per site conditions.
53	Installation, testing and commissioning of ceiling fan including wiring the down rod of standard length (upto 30 cm.) with 1.5 sq. mm. FRLS PVC insulated, copper conductor, single core cable, including providing and fixing phenolic laminated sheet cover on the fan box etc. as required.
54	Installation of exhaust fan in the existing opening, including making good the damage, connection, testing, commissioning etc. as required
54.1	Upto 450 mm sweep
G	SUB HEAD-VII:EARTHING
	BODY / SAFETY EARTHING (FOR BODY OF ELECTRICAL EQUIPMENTS LIKE SWITCH BOARD, DB, METER BOARD, SUB PANELS, LIFTS ETC.
55	Supply & burrying of 40 mm dia x 4.50 m long G.I. pipe (C class) vertically for earthing having 12 mm dia holes spaced 75 mm apart drilled upto 2 meter brom the bottom complete with one earthing lead of no. 6 to 8 SWG G.I.wire in 15 mm dia. GI pipe upto switch board (from apron to switch mm dia. GI pipe upto switch board (from apron to switch board the cost of GI pipe & GI wire will be extra), 300 mm square C.I. box with hinged cover, masonary housing alternate layer of charcoal/coke and salt atleast 150mm thick alround etc. as per the direction of engineer in-charge complete in all respect (For- Meter Boards)
55.1	Providing & fixing 25mm x 5mm G.I. strip on surface, in recess or in ground including connections etc. as required (Lift / Ex. Panels / Pumps / STP).
	SUB HEAD-VIII:LIGHTNING PROTECTION (CONVENTIONAL) AS PER IS - 62305-3:2010
	<u>Note - Before start working, Vendor should submit final Shop Drawing as per site conditions / requirement after site visit for approvals from architects / consultants.</u>
56	Supply & burrying of 40 mm dia x 4.50 m long G.I. pipe (C class) vertically for earthing having 12 mm dia holes spaced 75 mm apart drilled upto 2 meter brom the bottom complete with one earthing lead of no. 6 to 8 SWG G.I.wire in 15 mm dia. GI pipe upto switch board (from apron to switch mm dia. GI pipe upto switch board (from apron to switch board the cost of GI pipe & GI wire will be extra), 300 mm square C.I. box with hinged cover, masonary housing alternate layer of charcoal/coke and salt atleast 150mm thick alround etc. as per the direction of engineer in-charge complete in all respect (For- Lightning Protection)
57	Providing and fixing of lighting conductor finial , made of 25 mm dia. 300 mm long, G.I. tube, having single prong at top, with 85 mm dia 6 mm thick G.I. base plate including holes etc. complete as required.
58	Providing & fixing 8 mm dia Al conductor or G.I.tape 20 mm x 3 mm thick on parapet or surface of wall for lighting conductor complete with required numbers of cross connectors, expansion pieces & horizontal conductor holder as required (For horizontal run).
59	Providing & fixing 8 mm dia Al conductor or G.I.tape 20 mm x 3 mm thick on parapet or surface of wall for lighting conductor complete with required numbers of cross connectors, expansion pieces & verticcle conductor holder as required (For vertical run)
60	Providing and fixing testing joint , made of 8 mm dia Al conductor or 20mm. x 3 mm thick G.I. strip , 125mm. long, with 4 nos of G.I. bolts, nuts, check nuts and spring washers etc. complete as required.
61	Providing and fixing interception rod of 2 mtr height complete with stand & concrete block etc. complete as required.
62	Providing & laying G.I. tape, 25mm x 5 mm thick, from earth electrode directly in ground as erquired.

Sl. No.	DESCRIPTION
	Software & Gateways
70	Supplying, installing, testing and commissioning approved make Graphics User Interface for Monitoring & Control of complete Fire, Voice Evacuation & Telephone Talkback System. The GUI based main network software shall network with other panels on network. It shall be capable of graphically representing each facility being monitored with floor plans and icons depicting the actual locations of the various systems, and / or sensors' locations. It shall have the facility to change the sensitivity of any detector. The software shall be capable of monitoring 200 Nodes with 100 Mbps Transmission rate on Fibre Optics Network and 12 Mbps Transmission on cable and 2,50,000 network points. The software shall be capable to Monitor & Control all the Digital Voice Evacuation as well as 2 way communication from main control room using voice signals over Fire Network along with the Fire detection signal. The Graphic workstation shall act as an independent node communicating on the peer to peer network and shall not be dependant on the Fire Panel CPU for operation. Failure of Fire Panel CPU shall not result in failure of GUI.
71	Installing, testing and commissioning of OEM make Cloud based service through universal gateway, which shall be enabled through internet. Remote health monitoring solution shall utilize cloud based software-as-a-service web application & supplementary network gateway hardware. System shall provide secure web access to cloud based web application using any of the web browsers like Google Chrome (preferable), Internet Explorer etc. from any computer/ tablet/ smartphone connected over internet via defined credentials – username and password. It shall also have the facility to monitor the cloud service over the mobile apps. The cloud based web application shall capture all fire alarm system data points as received from the system via supplementary gateway hardware of the same make as Fire Alarm Panel. The software shall display real time view of fire system effectiveness, multi-location unified view, custom dashboard, device level information, scheduled reporting, e-mail of critical alarms. The cloud service shall be capable of monitoring 250000 datapoints scattered accross multiple install bases spread accross multiple geographical locations.
	Detectors
72	Supplying, installing, testing and commissioning approved make Addressable Multi-criteria Photo-Thermal Above False Ceiling Detector with sensitivity range of 0.5 to 4.0% obs/ft. The intelligent multi criteria detection device shall include the ability to combine the signal of the thermal sensor with the signal of the photoelectric signal in an effort to react hastily in the event of a fire situation. It shall also include the inherent ability to distinguish between a fire condition and a false alarm condition by examining the characteristics of the thermal and smoke sensing chambers and comparing them to a database of actual fire and deceptive phenomena. The detector shall have twin bi-colour LED for 360 deg viewing. Addressing shall be with user friendly rotary decimal switches. The detector sensitivity (day & night) shall be controlled from the panel to get accustomed to the local environment. The detector shall comply UL268, 7th Edition guidelines.
73	Supplying, installing, testing and commissioning approved make Addressable Photoelectric Smoke Detector with sensitivity range of 0.5 to 4.0% obs/ft. The detector shall have group decision technology for faster response & avoid false alarms. The detector shall have twin bi-colour LED for 360 deg viewing. Addressing shall be with user friendly rotary decimal switches. The detector shall work on cooperative mode to avoid false alarm. The detector shall comply UL268, 7th Edition guidelines.
74	Supplying, installing, testing and commissioning approved make Addressable Rate of Rise Heat Detector rated at 8.3 deg C/min. The detector shall have twin bi-colour LED for 360 deg viewing. Addressing shall be with user friendly rotary decimal switches. Detector shall comply UL521 guideline.
75	Supplying, installing, testing and commissioning approved make Response indicator for all detectors located above false ceiling.
76	Supplying, installing, testing and commissioning approved make Gas Detector. Product Shall be listed under UL Listed to standard 268A-7th edition & FM approved
77	Supplying, installing, testing and commissioning Addressable Multisensor (Smoke + Heat + CO + IR) Detector. The detector shall have four sensing elements viz. Photo electric smoke, Heat, Carbon Monoxide & Infra Red Flame detection combined in a single detector. The detector shall have twin bi-colour LED for 360 deg viewing. Addressing shall be with user friendly rotary decimal switches. The internal CO Sensor should be replaceable upon EOL. It should be possible to generate 2 distinctive tones if the CO concentration reaches 2 definite user defined levels. The detector shall comply UL guideline

Sl. No.	DESCRIPTION
	Modules
78	Supplying, installing, testing and commissioning Addressable Manual Call Point (Break Glass Type). The device shall have an LED which shall blink in normal state & get steady on activation to monitor the health status of the device. The device shall comply UL approval.
79	Supplying, installing, testing and commissioning Addressable Control Module for Sounders / Strobes / Sounder cum Strobes. The control module shall provide supervised NAC output rated at 24v DC, 2A. The device shall have an LED which shall blink in normal state & get steady on activation to monitor the health status of the device. Addressing shall be with user friendly rotary decimal switches. Module shall be supplied with mounting plate from OEM for ease of installation & maintenance.
80	Supplying, installing, testing and commissioning Addressable Relay Module for AHU, Access Control, Lifts, Staircase Pressurization, Fire Suppression & other Third Party Outputs. The relay module shall provide contact rated at 24v DC, 2A. The device shall have an LED which shall blink in normal state & get steady on activation to monitor the health status of the device. Addressing shall be with user friendly rotary decimal switches. Module shall be supplied with mounting plate from OEM for ease of installation & maintenance.
81	Supplying, installing, testing and commissioning approved make Addressable Monitor Module for Sprinklers, Panic Bars & other Third Party Inputs. The monitor module shall monitor potential free contacts. The device shall have an LED which shall blink in normal state & get steady on activation to monitor the health status of the device. Addressing shall be with user friendly rotary decimal switches. Module shall be supplied with mounting plate from OEM for ease of installation & maintenance.
82	Supplying, installing, testing and commissioning approved make Isolator Module for Isolating short / dewired / loose circuits with automatic resetting arrangement. Isolator Base can also be proposed, however in that case needs to be considered with each detector & module. The device shall have an LED which shall blink in normal state & get steady on activation to monitor the health status of the device. Module shall be supplied with mounting plate from OEM for ease of installation & maintenance.
	Notification Devices
83	Supplying, installing, testing and commissioning approved make Sounder cum Strobe rated at 80 dBA @ 3m for Audible annunciation and 115cd flashintg at 1 Hz for visual indication. UL Listed
84	Supplying, installing, testing and commissioning approved make 2W Multi-Tap (0.25W; 0.5W; 1W; 2W), Ceiling Mount Speakers. The speakers shall be of same make as that of the Control Panel & Amplifiers. They shall be compatible with supplied Amplifiers and shall work on 70.7Vrms. UL Listed
85	Supplying, installing, testing and commissioning approved make 2W Multi-Tap (0.25W; 0.5W; 1W; 2W), Wall Mount Speakers. The speakers shall be of same make as that of the Control Panel & Amplifiers. They shall be compatible with supplied Amplifiers and shall work on 70.7Vrms. UL Listed
86	Supplying, installing, testing and commissioning approved make Addressable Power Supply Unit: 24V DC for Notification Appliances. The PSU shall be UL Listed, supervised by Fire Panel & of the same make as Fire Alarm System
	Telephone Talkback
87	Supplying, installing, testing and commissioning approved make Addressable Fire Fighter's Telephone Jack with suitable supervised module along with Portable type Fire Telephone Handset for two way communication between Remote Fire Fighter & Fire Command Center. UL Listed
	Cable & Conduits
88	Supply and drawing of 2 C X 1.5 Sq mm multi stranded twisted unshielded FRLS Copper cable.
89	Supplying, installing, testing and commissioning approved make FRLS MS conduits on ceiling / wall / floor etc. complete with accessories like, Junction boxes, Collars, Bends etc.
89.1	32 mm dia.
89.2	25 mm dia.
89.3	20 mm dia.

Sl. No.	DESCRIPTION
90	Supplying, installing, testing and commissioning approved make 20 mm dia. PVC flexible conduits on ceiling / wall / floor etc. complete with accessories like, Junction boxes, Collars, Bends etc.
	FIRE ALARM SYSTEM -LINER HEAT DETECTION SYSTEM
91	Supply Installation, Testing & Commissioning of Fire Alarm Control Panel Sensor Control Unit with Relay Module REL835. It provides up to two d-LIST sensor cables with power, carries out cyclical scanning of the connected sensors every 10 seconds, logs the received temperature values and evaluates them according to different criteria, Alarms and temperature data can also be output via Ethernet IP.
92	Supply Installation, Testing & Commissioning of Sensor Cable of 1 mtr sensor spacing, The cable can be used in a temperature range of -40 °C to +85 °C (transient +120 °C) and detects temperatures with a resolution of 0.1 °C. The maximum cable length is 350 metres or 100 sensors per channel.
93	Supply Installation, Testing & Commissioning of Cable clamp MDC, Stainless steel clamp for sensor cable (100 pc. packet)
94	Supply, installation, testing & commissioning of Connection Cable, The connection cable serves to connect the processor unit to the sensor cable.
95	Supply Installation, Testing & Commissioning of Connection Box CBO, Connection unit for temperature sensor cables, including UCM universal connection module.
96	Supply Installation, Testing & Commissioning of Graphics software. Configuration software was specially developed for the operation and programming of the sensor control unit. Setting pre-alarms and alarm thresholds (different thresholds for different sensors possible, even within a group), Two-sensor dependency to prevent false alarms.
97	Supply Installation, Testing & Commissioning of Dongle (USB) for DList Config with keyring
98	Supply Installation, Testing & Commissioning of End device END, Shrink cap as termination of the sensor cable.
	SUB HEAD-XI:NVR BASED CCTV SURVEILLANCE SYSTEMS
99	2 Megapixel IP IR Dome Camera :- Supply, installation, testing and commissioning of UL Listed 2 Megapixel, 1/3" progressive CMOS Vandal-proof, Network Dome Camera, Day & Night IR cut filter with auto switch, Digital WDR, 3D DNR, Video Compression H.264/MJPEG, Minimum Resolution 1920 x 1080:25fps, Built-in Micro SD/SDHC/SDXC card slot, up to 64 GB, Line Crossing, Intrusion Detection, Motion detection, Dynamic analysis, One-key reset, Flash-prevention, dual stream, heartbeat, mirror, Standard ONVIF, PSIA, CGI, ISAPI, Operating Conditions, -30 °C – 60 °C (-22 °F – 140 °F), PoE (802.3af), IR Range 30 meters, Ingress Protection, Backlight compensation, 0.01Lux @ (F1.2, AGC ON), 0 Lux with IR, 0.028 Lux @ (F2.0, AGC ON), 0 Lux with IR, 4mm @ F2.0 lens (2.8mm, 6mm optional), including RJ45 connector for connection etc. required for commissioning.
100	2 Megapixel IP IR Box/Bullet Camera :- Supply, installation, testing and commissioning of UL Listed 2 Megapixel, 1/3" progressive CMOS Vandal-proof, Network Box/Bullet Camera, Day & Night IR cut filter with auto switch, Digital WDR, 3D DNR, Video Compression H.264/MJPEG, Minimum Resolution 1920 x 1080:25fps, Built-in Micro SD/SDHC/SDXC card slot, up to 64 GB, Line Crossing, Intrusion Detection, Motion detection, Dynamic analysis, One-key reset, Flash-prevention, dual stream, heartbeat, mirror, Standard ONVIF, PSIA, CGI, ISAPI, Operating Conditions, -30 °C – 60 °C (-22 °F – 140 °F), PoE (802.3af), IP66, Impact Protection IK08, IR Range 50 meters, Ingress Protection, Backlight compensation, 0.01Lux @ (F1.2, AGC ON), 0 Lux with IR, 0.028 Lux @ (F2.0, AGC ON), 0 Lux with IR, 6mm @ F2.0 lens (4mm optional), Including Bracket, including RJ45 connector for connection etc. required for commissioning.

Sl. No.	DESCRIPTION
101	Supply, installation, Testing and Commissioning of UL listed NVR . This shall support minimum 5 clients and include the required hardware cost and the software cost for the same as per the system requirement. APP allows a quick remote access and control via mobile phone, having minimum 25 Mbps Incoming bandwidth & 80Mbps Outgoing bandwidth & recording resolution of video all channel suitable for 1080 realtime /nonrealtime Live view,H.264/MJPEG dual core decoding,Max 240fps@1080p,480fps @720p,960 fps @D1 preview & recording,Up to 5Mp resolution,Support minimum 4 SATA slot for hard disk , 2 USB 2.0,should have 2HDMI ports & 1 VGA port for simultaneous video output,Support Multi-brand Network camera, ONVIF Version 2.0 with input voltage of 240 V AC, suitable Hard disk required for 15 days recording (calculations to be submitted by vendor) complete as per specifications, DVR should be of same make as Cameras .
	64 Channel
102.0	Supply,installation,testing and commissioning of 10/100/1000 Fast Ethernet L2 Managed stackable switches- All PoE managable network switch with 2x Gigabit ports or 2xSFP slots for Fiber modules with suitable POE budget for camera rating & upto 4 KV surge protection for camera & POE Port etc required for commissioning.
102.1	12 Port
103	Supply,installation,testing and commissioning of following port loaded jack panel for CAT6 Cable termination .
103.1	8 Port
103.2	24 Port
104	Supply,installation,testing and commissioning of following port loaded LIU with adaptor plates , pigtel cables for connections
104.1	4 Port
104.2	24 Port
105	Supply , Installtion , Testing and comissioning of CAT6 patch cord 3 feet for rack side switch termination.
106	Supply , Installtion , Testing and comissioning of SC-LC Single mode fiber patch cord
107	Supply, Installation, Testing & Commissioning of Fibre Modules 1000BASE-SX SFP connector.
108	Supply, installation, testing & commissioning of Layer-3, 24 Port Switch 10/100/1000 BaseT and 4 no 1G/10G SSP+ Ports with Internal RPS(Redundant Power Supply) with SFP Module Cost inclusive of LIU and LC couplers, plates, mounts etc. required for commissioning.
109	Supply,installation,testing and commissioning of 40" CCTV colour Led Monitor including all accessories complete as required.
110	Supply, installation, testing and commissioning of floor standing 19 " communication Rack with front glass door with lock and key arrangement, rear MS door, passive and active mountable space with active switch installable space, horizontal power manager, cable manager, twin fan, cantilever tray and castor wheel fixed complete as required.
110.1	32U
111	Supply, installation, testing and commissioning of wall mounted Rack with front glass door with lock and key arrangement, rear MS door, passive and active mountable space with active switch installable space, horizontal power manager, cable manager, twin fan, c complete as required.
111.1	9U
J	SUB HEAD-XII:UPS SYSTEM
112	Supply, Installation, Testing & Commissioning of on line UPS as per following details :- Technology : Micro processor based controls, True on line, Double conversion type, should have cold start facility. Input :- (mains / local D G set compatibility) a) Voltage : 230 V / 1 Phase b) Voltage Variation : - 20% to + 20% c) Input Frequency : 50 Hz. d) Frequency Variation : + 10%

Sl. No.	DESCRIPTION
	Output :-
	a) Voltage : 230 V / 1 Phase
	b) Voltage Variation : + 1%
	c) Frequency Variation : 50 Hz. + 0.1%
	Overall Efficiency : > 90%
	Charger : Should have built in charger to suit system requirement.
	Battery type : Sealed Maintenance Free - SMF
	Back-up time : 20 Min. with SMF batteries
	Rating : 3 KVA
113	Supply of ISI marked Copper conductor PVC insulated FRLS Armoured Copper cable as per IS 1554 or XPLE insulated as per IS 7098 PVC sheathed 1100 volts grade.
113.1	3 x 2.5 sq mm
113.2	3 x 6 sq mm
114	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.
114.1	1 run of cable
115	Supply of 4 pair LAN (CAT-6) STP Armoured cable , UL certified.
116	Supply of 4 core, Single mode Armoured optical Fibre cable .
117	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required.
117.1	63 mm dia (OD-63 mm & ID-51 mm nominal)
118	Supplying and installing following size of perforated painted with powder coating M.S. cable trays Tee with perforation not more than 17.5%, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required
118.1	150 mm width X 50 mm depth X 1.6 mm thickness (in mtr.)
119	Laying of Aluminium conductor XLPE insulated cable /Armoured Copper cable /CAT-6 Armoured Cable/ Fibre Cable on following ways including required accessories & hardware for proper connection, complete in all respect. The armoring of the Power cable shall be properly connected with the earth conductor including fixing of palm or pin type copper tin plated cable socket (lug) to the cable leads, glands, connectors, junction box, insulating with tape and making connections complete in all respect including supply of clamps, lugs, glands, JB, tape etc complete upto the satisfaction of Engineer-in-charge.
119.1	On surface the cable run shall be fixed by GI clamps etc. of suitable size or on existing cable tray.
119.2	In the existing RCC/HUME/METAL Pipe complete.

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
INTERNAL FIRE FIGHTING FOR RESIDENTIAL BLOCKS	
SCHEDULE D2G	
S. NO.	DESCRIPTION
S.No.	DESCRIPTION
A	FIRE HYDRANT SYSTEM
1.0	Providing, laying, jointing, testing and commissioning of following sizes of MS 'C' Class (Heavy duty) pipes conforming to IS-1239 with all accessories like orifice plate(of required dia), all fittings (standard MS fitting with welded joint shall be used on the pipes) including tees, elbows, reducers, union, flanges, rubber gaskets, GI nuts bolts, washer including supporting/fixing the pipe on floor / wall /ceiling with clamps, hangers (using anchor fastners) as per specification. G.I. pipe sleeve of suitable higher size shall be provided wherever the pipes are crossing the walls/floors and sealing the sleeves with glass wool in between & fire sealant compound at either end all as per Project Manager's / Consultants requirements including cutting holes and chases in brick, RCC work and making good the same to original conditions complete in all respects. All hangers, clamps, brackets etc. shall be of galvanized iron unless specified otherwise and then supply of the same shall also be included for rates under this head.
	Welding of any kind on the galvanized support / hanger shall not be permitted including synthetic enamel paint of approved shade over a coat of zinc primer.
	Note: Pipe upto 50 mm dia shall be threaded joints, above 50 mm shall be welded joints.
a.	25 mm dia
b.	32 mm dia
c.	40 mm dia
d.	50 mm dia
e.	65 mm dia
f.	80 mm dia
g.	100 mm dia
h.	150 mm dia
j.	200 mm dia (Wall thickness 6.3mm)
2.0	Providing two coats of synthetic enamel paint of approved shade over a coat of primer. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. Including painting of legends both direction arrow as per the approval of the Project Manager.
a.	25 mm dia
b.	32 mm dia
c.	40 mm dia
d.	50 mm dia
e.	65 mm dia
f.	80 mm dia
g.	100 mm dia
h.	150 mm dia
j.	200 mm dia
3.0	Providing laying, testing & commissioning of ' C' class heavy duty MS Pipe conforming to IS 1239/3589 i/c fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. in ground including welding, excavation & providing cement concrete blocks as supports, anticorrosive treatment with coaltar/asphalt tape as per IS 10221, refilling the trench etc. of following sizes complete as required.
	150 MM NB
4.0	Providing and fixing M.S. structural work fabricated from standard sections, (MS rounds, angles, channels etc.) including cutting to size, drilling, welding, including cost of fasteners, clamps in RCC structural members as directed, including two or more coats of synthetic paint over one coat of primer after surface preparation including cutting and making good walls.

S.No.	DESCRIPTION
5.0	Providing & fixing Stainless Steel fire hydrant single headed landing valve with 80 NB flanged inlet, brass spindle controlled 63 mm dia female instantaneous outlet type coupling, blank cap, chain, twist release type lug & all accessories. Conforming to IS standard. Including fixing with anchor fastner and flanged tapping from wet riser and providing pressure gauge with gun metal ball valve complete as required.
6.0	Providing and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :
6.1	Stainless Steel (Grade 304)
7.0	Supplying & fixing 63 mm dia Stainless Steel short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :
7.1	Stainless Steel (Grade 304)
8.0	Providing & Fixing of standard Fireman's Axe with heavy insulated handle.
9.0	Providing & Fixing of wall mounting swinging type first aid fire hose reel with drum, hanging bracket, 36.5 Mtr. length x 20 mm dia high pressure hose reel tubing as per IS: 444 with gun metal (GM) shut off nozzle having 5 mm dia orifice. The hose reel shall be conforming to IS : 884-1985. Rate shall include 25 mm dia M.S. pipe connection from Riser to hose reel, sockets, nipples, elbows and ball valve (25 mm dia). Drum shall be fixed on adjoining wall through anchor fasteners / cement concrete block as and when required. (For internal hydrant system).
10.0	Providing & fixing fire authority approved powder coated Aluminum door frame and shutter (size as per drawings) frame capable of accommodating fire hose reel, fire hydrant, hose pipe, fittings & accessories. The box shall have a single or double glazed front glass door (with 5 mm thick glass) with lock & key arrangement & shall be Powder coated with Fire red as per IS:5, shade no. 536. (For Internal Hydrant)
11.0	Providing and fixing ball valve (brass) of approved quality complete. (High or low pressure with plastic floats). 25 mm nominal bore
12.0	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :.
a.	65 MM NB
b.	80 MM NB
c.	100 MM NB
d.	150 MM NB
e.	200 MM NB
13.0	Providing, installation, testing and commissioning of non-return valve of following sizes confirming to IS: 5312 complete with rubber gasket, GI bolts, nuts, washers etc.as required :
a.	65 mm dia
b.	150 mm dia
14.0	Supplying and fixing air vessel made of 250 mm dia , 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mo dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.
15.0	Supplying and fixing orifice plate made out of 6 mm thick stainless steel(Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce presure at the outlet to the level of 3.5 kg/sq.cm complete as required.

S.No.	DESCRIPTION
	<u>Note: All valves shall be of minimum 16 Kg/sq.cm working pressure</u>
B.	PORTABLE FIRE EXTINGUISHERS
1.0	Supply & erection of ISI marked portable fire extinguishers , wall mounted type, wall brackets complete in all respect as per standard item with all accessories, delivery hose & nozzle wherever required, including fixing on walls as per the directions of Engineer-in-charge.
1.1	Water CO2 type. 9 Lt.capacity (IS:940)
1.2	CO2 gas type. 4.5 kg. Capacity (IS:2878)
2.0	Supply & fixing of 4 nos. G.I. round bottom fire buckets of 9.5 liters capacity filled with sand including proper supporting / mounting arrangements in MS angle iron frame, painted by fire red colour over two coats of red oxide paint and written with white paint "FIRE" complete in all respects as per the directions of Engineer-in-charge.
C	FIRE HOSE CABINET
1.00	Providing and fixing standard fire hose cabinet (1000 mm x 2000 mm x 450 mm) indoor type suitable for accomodating internal hydrant, hose reel made of not less than 16 SWG MS sheet having full fronted glass hinged door (5 mm thick clear glass) including necessary locking arrangement with handle for housing two nos. 15 meter long fire hose pipes, 30 meter long hose reel, branch pipe and hydrant valve as required as per drawings, including brackets for mounting accessories, painting (one coat primer and two coat of fire red colour). The cabinet shall be mounted on suitable raised platform. The words " FIRE HOSE " to be painted on the box. (In Stilt & Podium as shown in drgs.)
D	SPRINKLER PIPING & ACCESSORIES
1	Providing, laying, testing & commissioning of ' C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :
1.1	25 mm dia
1.2	32 mm dia
1.3	40 mm dia
1.4	50 mm dia
1.5	65 mm dia
1.6	80 mm dia
1.7	100 mm dia
1.8	150 mm dia
2	Supplying, installation, testing & commissioning of sprinkler flexible pipe (UL Listed) of stainless steel complete with 15 NPT on reducer thread with maximum working pressure of 175 PSI test pressure of 875 PSI (Burst) with branch line (Inlet) 25mm NPT male thread to sprinkler head (Outlet) 15mm NPT female thread with reducer, nipple, 2 side brackets, center bracket, stockbar of following sizes complete as required.
2.1	1200 mm length
3	Providing, fixing, testing & commissioning of 15 mm size quartzoid bulbtype sprinklers , of rating 68 degree C. with required accessories.
3.1	Pendent
3.2	Horizonrtal Side wall
4	Providing, fixing, testing & commissioning flow switches in M.S Pipe as required.
4.1	150 mm dia

S.No.	DESCRIPTION
4.2	80 mm dia
4.3	65 mm dia
5	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with S.S 304 Disc,S.G Iron body Nitrile /EPDM Rubber lining duly ISI conforming to IS 13095 of following sizes as required
5.1	150 mm Dia
5.2	100 mm dia
5.3	80 mm dia
5.4	65 mm dia
6	Providing, installation, testing and commissioning of non-return valve of PN 1.6 with following sizes confirming to IS: 5312 complete with rubber gasket, GI bolts, nuts,washers etc.as required :. (Make:zoloto)
6.1	150 mm Dia
6.2	100 mm dia
7	Providing, fixing, testing & commissioning of 50 mm diameter single lever inspectors testing assembly complete in all respects.


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 CONNAUGHT PLACE
 NEW DELHI-110001
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CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCHEDULE D3A	
SCOPE OF WORK	
FOR CIVIL WORKS FOR CLUB HOUSE	
SR. NO.	DESCRIPTION
1.0	EARTHWORK FOR TOWERS- Included in Scope of work for Basement
2.0	DE-WATERING FOR TOWERS- Included in Scope of work for Basement
3.0	CONCRETE WORK
3.1	Providing and laying in position cement concrete of specified grade, including the cost of centering and shuttering. All work upto plinth level.
a	1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size).
b	1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size).
3.2	Providing and laying cement concrete in string or lacing courses, parapets, copings, bed blocks, anchor blocks, plain window sills, fillets etc. at all floors, including the cost of centering, shuttering and finishing.
a	1:2:4 (1 cement: 2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size)
3.3	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size) including providing and mixing water proofing material in cement concrete work @ 1 Kg per 50 kg of cement with Bitumen coating.
4.0	REINFORCED CEMENT CONCRETE WORK
	Note: No additional payment will be made for a richer mix of column spread into beam/slab during casting.
	All form work upto First Floor Level shall be in conventional Plywood/wooden shuttering thereafter Aluminium Shuttering shall be used.
4.1	Providing and laying Self Compacting Concrete in position machine batched, machine mixed and machine vibrated Design mix cement concrete of M-25 grade for reinforced cement concrete structural elements including the cost of Aluminium centering & shuttering, finishing and admixtures in recommended proportions (as per IS: 9103) to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per directions of CGEWHO/Architect/PMC. (Minimum Cement content for M-25 shall be @ 330 kg/cum)
a)	All works upto plinth level including Raft foundation, isolated/combined footings, Columns, retaining walls, staircase, plinth beams , slab & beams etc including all other possible locations.
b)	All work in superstructure (any thickness) in all shapes, sizes , heights and levels
i	Walls, columns, pillars, posts and struts
ii	Beams, plinth beams, girders, bressumers, cantilevers, suspended floors, sunshades, lintels, roofs and folded steps & risers, staircases including spiral staircases, shelves, fins and pergola beams and planters etc.

4.2 (a)	Providing and fixing of customized Aluminium form work for monolithic construction on RCC members with repetitive usage made up of aluminium sheets/plates of minimum 4mm thickness and grade 6061 (Type-6). The formwork comprises of (a) wall panel, rocker, kicker and internal soffit corner, external soffit corner, external corner, internal corner etc., (b) beam components i.e, beam side panel prop head for soffit beam, beams soffit panel, beam soffit bulk head and (c) deck components i.e. deck panel, deck prop, prop length, deck mid, soffit length, deck beam bar. The panels are held in position by a simple pin and wedge system that passes through holes in the outside rib of each panel. The tolerance of finished panel shall not be less than (-1 mm) and shall conform to IS 14987-1999. Pins and wedges to be made of high grade hot dipped galvanized mild steel.
	This form work also comprises of M.S. angle iron, "Z" shaped brackets braced diagonally at 0.90 to 1.00 mtr. centre to centre on external wall face just the level below on which to lay M.S. square tube panels (Challis) and guard railing supports to form working platform and 40 mm dia G.I. telescopic adjustable props to support deck formwork and beam soffit panels including de-shuttering the formwork from odd/even level to be shifted/lifted to next alternate odd/even level before which the points and shuttering surface to be thoroughly cleaned, pins greasing and shuttering surface oiling properly before fixing all complete including sealing of gap between kicker plates of wall panel and floors (if any) as per design of formwork as provided by shuttering supplier and as per direction of the Engineer-in-charge including filling and finishing the holes of varied sizes and shapes (left by keys/pins of aluminium form work shuttering while de-shuttering) with GP-2 cementitious polymer compound mixed with water including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall
	The holes /sleeves/ cutouts/grooves for plumbing pipes, water supply pipes, AC pipes, Kitchen chimney exhaust pipes or any other cutouts shall be inclusive in the quoted price.
	OR
4.2 (b)	Centering and shuttering including strutting, propping etc. and removal of form work for Foundations, footings, bases of columns, Walls (any thickness) including attached pilasters, buttresses, plinth and string courses, Suspended floors, roofs, landings, balconies and access platform, Shelves (Cast in situ), Lintels, beams, plinth beams, girders, brusses and cantilevers, Columns, Pillars, Piers, Abutments, Posts, Struts, Stairs, Spiral staircases (including landing), Arches, domes, vaults up to 6 m span, Extra for shuttering in circular work, Small lintels not exceeding 1.5 m clear span, moulding as in cornices, window sills, string courses, bands, copings, bed plates, anchor blocks and the like, Edges of slabs and breaks in floors and walls, Cornices and mouldings, Weather shed, Chajjas, corbels etc. (The Shuttering may be used in aluminium or ply as per the requirement as site)
4.3	Add for providing richer mixes at all heights and levels.
a	Providing M-30 grade R.C.C. instead of M-25 grade R.C.C. (Minimum Cement content for M-30 shall be @ 340 kg/cum).
b	Providing M-35 grade concrete instead of M-25 grade R.C.C. (Minimum Cement content for M-35 shall be @ 350 kg/cum)
c	Providing M-40 grade concrete instead of M-25 grade R.C.C. (Minimum Cement content for M-40 shall be @ 360 kg/cum)
4.4	Providing, hoisting and fixing at all levels precast reinforced cement concrete in lintels exceeding 0.75 m clear span at all heights & floors including the cost of required centring and shuttering with 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size).
4.5	Reinforcement steel (Fe 500 D) for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete at all levels and in all R.C.C. items with 18 gauge binding wire and cover blocks of specified thickness in CM (1:3) complete, as per drawings and specifications at all heights and levels.
a	Corrosion Resistant Steel (CRS) Thermo mechanically treated bars confirming to Fe-500D grade

4.6	Extra for additional height in centering,shuttering wherever required with adequate bracing, propping etc including cost of de-shuttering and de-centering at all levels, over a height of 3.5m for every additional height of 1 metre or part thereof.
a	Suspended floors, roofs, landings, beams and balconies.
4.7	Plaster drip coarse/groove in plastered surface or moulding to RCC projections.
4.8	Providing and placing Rebars of the following dia of Reinforcement including designing depth, drilling, fixing with spacificd chemical as per the spacification of HILTI or equivalent including conducting the pull out test as per standard norms/IS code.The minimum depth of rebarring shall be 10d.
4.8.1	10 mm dia
4.8.2	12 mm dia
4.8.3	16 mm dia
4.8.4	20 mm dia
4.8.5	25 mm dia
4.9	Providing and applying NETOBOND chemical over the joint of existing concrete and new poured concrete before casting as per specification of the manufacturer.
5.0	BRICK MASONRY WORK
5.1	Brick work with common burnt clay FPS bricks of class designation 10 in foundation and plinth in cement mortar 1:6 (1 cement:6 coarse sand).
5.2	Brick work with common burnt clay FPS bricks of class designation 10 in cement mortar 1:6 (1 cement : 6 coarse sand) in superstructure above plinth level, upto any floor in all shapes and sizes as shown in drawings
5.3	Half brick masonry of common burnt clay FPS bricks of class designation 10 in cement mortar 1:4 (1 cement: 4 coarse sand) in superstructure above plinth level upto all floors and level including providing and placing 2 nos. 6 mm dia M.S. bars at every fourth course as shown in drawings.
6.0	WOOD WORK
	Mango Wood Frame
6.1	Providing and fixing factory made door/window frames in Mango wood in Single/double rebate frames of following sizes including 35x12mm wooden moulding of Mango wood all around the frame including synthetic enamel paint with two or more coats on new works including a coat of wood primer, one side flush with brick or block work/ column and fixed in position with M.S. hold fasts 40 x 5 mm and 300 mm long 3 nos. on each side or 100 mm long gun metal dash fastner in case of RCC column/solid CC block in 1:3:6, including grooves and making arrangement as shown on drawing, applying anti-termite paint on surfaces touching masonry or concrete etc. complete
	100 mm x 65 mm for internal door frames (Frame and wall thickness shall be same)
6.2	Providing and fixing 35 mm thick Pre-Laminated flush door shutter , decorative type confirming to IS: 2202 (Part 1) , core of block board construction with frame of 1st class hard wood and well matched 3 ply commercial vennering on both faces of shutters and both side laminated with approved quality high pressure malamine faced lamination 1.00mm thick using phenol formal-dehide synthetic resin (conforming to B.W.P. Type specified in IS:848 1974) including 25 mm thick lipping of 2nd class teak wood glued & nailed all around complete, painting with 2 or more coats with spray synthetic enamel paint over a coat of wood primer to give an even shade.

6.3	Providing 40x5 mm flat iron hold fast 30 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embeddings in cement concrete block 30x20x10/20 cm 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size)
6.4	Providing and fixing carbon steel galvanised (minimum coating 5 micron) dash fastener of 10 mm dia double threaded 6.8 grade (yield strength 480 N/mm ²), counter sunk head, comprising of 10 mm dia polyamide PA 6 grade sleeve, including drilling of hole in frame , concrete/ masonry, etc. as per direction of CGEWHO/Architect
6.4.1	10 x 100 mm
6.5	Providing and fixing Stainless steel (304 grade) fitting of approved make with necessary screws etc. complete.
a)	Sliding aldop
	250 x 16 mm or as required
b)	Tower Bolt
i)	600 x 10mm or as required
ii)	250 x 10mm or as required
iii)	150 x 10mm or as required
c)	Handles
i)	450mm long
ii)	300mm long
iii)	125mm with plate 175 X32 mm
d)	Hanging floor door stopper 150 mm or as required
e)	40mm dia rubber buffer of required length with necessary stainless steel screws etc. complete
f)	Stainless steel butt hinges with necessary screws etc. complete
i)	125 x 70 x 4 mm hinges or as required
g)	Mortice latch & lock with six levers and a pair of lever handles (Dorset-Orius ORS/ SS or GEZE -8116431 SS finish)with necessary screws etc complete for all doors except toilets (Cylinder with one side Knob and other side Key)
h)	Mortice latch & lock with six levers and a pair of lever handles (Dorset-Orius ORS/ SS or GEZE -8116431 SS finish)with necessary screws etc complete for toilet doors (Cylinder with one side Knob and other side coin)
6.6	Providing and Fixing of 46mm thick Fire Check door of 120 minutes fire rating fabricated with 1.2mm thick galvanised sheet with infill of fire rated Acrylic Sealant and non-combustible core bonded to both faces of sheet with lock seam joints at stile edges and internal reinforcement at top, bottom and stile edges for fire rating. The door frames are manufactured from 1.6mm thick galvanised steel sheet pressed from to double rebate profile of size 143mm x 57mm. The door frames and door shutters are finished with zinc chromate primer in accordance with BS 476 Part 22 and IS 3614 Part II for 2 Hrs. rating including all type of fittings, door closer, wired vision panel etc complete.

6.7	Design supply & installation of suspended Spider Glazing system designed to withstand the wind pressure as per IS 875 (Part-III). The Suspended System held with Spider Fittings of SS-316 Grade Steel of approved manufacturer with glass panel having 12 mm thick clear toughened glass held together with SS- 316 Grade Stainless steel Spider & bolt assembly with laminated glass fins 21 mm thick. The Glass fins and glass panel assembly shall be connected to Slab/beams by means of SS- 316 Grade stainless steel brackets & Anchor bolts and at the bottom using SS channel of 50x25x2 mm using fastener & anchor bolts, non staining weather sealants of approved make, Teflon/ nylon bushes and separators to prevent bi-metallic contacts, all complete to perform as per specification and approved drawings. The complete system to be designed to accommodate thermal expansion & seismic movements etc. The joints between glass panels (6 to 8 mm) and gaps at the perimeter & in U channel of the assembly to be filled with non staining weather sealant, so as to make the entire system fully water proof & dust proof. The rate shall include all design, Engineering and shop drawing including approval from structural designer & IIT Roorkee, labour, T&P, scaffolding, other incidental charges including wastage, enabling temporary services all fitting fixers nut bolts, washer, Buffer plates, fastener, anchors, SS channel laminated glass etc. all complete.
7.0	STEEL WORK
7.1	Providing and fixing Stainless steel (grade 304) railing made of Solid/ hollow sections for balcony & staircase railing including welding, grinding, buffing, polishing and making curvature wherever required and fitting the same with necessary stainless steel nuts and bolts etc, including fixing to the wall, floor with necessary fasteners etc & making good the same as per details shown in drawing.
a	SS solid/hollow section or in their combination for railings
7.2	Providing and fixing Powder Coated M S staircase railing by welding etc, complete and fixing to the wall, floor with necessary C.C., holdfast, anchor fastener etc & making good the same as per details shown in drawing.
a	M.S. tube (medium), M.S. square bars & M.S. flat or in their combination for staircase railings, ladders, frames etc
7.3	Providing and fixing S.S. & Glass railing with min 10 mm th. clear toughened glass with square/round S.S. bars, flats, pipes, balustrades with rectangular/round pipe railing, glass bracket fittings & all balustrade accessories etc., as per design and fixing in RCC/brick masonry or/and treads of steps with dash fastener complete (all as per drawing).
7.4	Providing & fixing in position M.S. grating made out of M.S. flat iron, angle iron frames including applying two or more coats of synthetic enamel paint over one coat of steel primer complete as per details shown in drawing.
7.5	Structural steel work welded in built up Section trusses and frame work etc. for Gazibo, Pergola and other locations as shown on drawing for all heights including cutting, hoisting, scaffolding, fixing in position and applying two or more coats of synthetic enamel paint over a priming coat of approved steel primer all complete as shown in drawings. The top of gazebo shall be provided with GI colour sheet of 0.8mm thickness and pergola with 10mm thick poly carbonate sheet duly fixed with MS sections, as per vendor details. The colour and design of sheet shall be approved by Architect/CGEWHO.
a	M.S. tubes, plates etc.
7.6	Providing and fixing 14 gauge 50mm dia M.S. pipe/ M.S. D-shape hand rail section for hand rails of required shape and profile, including welding and fixing in position at all places and levels, including 2 or more coats of enamel paint over a coat of red oxide primer on all steel surfaces of approved make and manufacturer complete.

7.7	Providing and fixing T-iron frames for doors, windows of M.S. section, joint, mitred & welded with 15x3mm lugs 10cm long embedded in cement concrete blocks 15 x 10 x 10cm of 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) or as required including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer including 1mm thick M.S. sheet door with frame of 40 x 40 x 6mm angle iron and 3mm M.S. gusset plate at the junction and corners, all necessary fittings complete including a priming coat of approved steel primer using flats 30 x 6mm for diagonal braces & central cross piece.
7.8	Providing and fixing circular/ hexagonal cast iron or M.S. sheet box for ceiling fan clamp of internal dia 140mm, 73mm height top lid of 1.5mm thick M.S. sheet with its top surface hacked for proper bonding, top lid shall be screwed into the cast iron/M.S. sheet box by means of 3.3mm dia round headed screws, one lock at the corners. Clamp shall be made of 12mm dia M.S. bar bent to shape as per standard drawing.
7.9	Providing and fixing Double seal cast Iron Manhole cover of 600x600mm in/over OH tank slab. The locking arrangement shall be made of 40x5mm MS flat with holdfast, hinges and other details including cutting welding etc as approved by Engineer in charge. The steel work shall be painted in two or more coats in approved shade over a coat of primer complete.
7.10	Providing and fixing rolling shutters with 80x1.25 mm M.S. laths & 1.25 mm thick top cover of approved make, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters including ball bearing etc complete.
8.0	FLOORING
	Note: Standard flooring margin is 50mm (except for stilt & basement flooring)including margins for adjustment of provision of slope and drops. Nothing extra shall be paid for additional thickness of mortar required in flooring.
8.1	Providing and laying design mix 75-100 mm Vacuum dewatered cement concrete flooring with broom finish in Stilt, roads, driveways having a minimum works test beam flexural strength of 30 kg. per cm ² . at 28 days using not less than 340 Kg. of cement per cum of finished concrete, coarse sand and graded stone aggregate of 20mm nominal size in appropriate proportions as per specified design criteria approved by CGEWHO / Architect mechanically vibrated using needle and surface vibrators including steel form work with sturdy M. S. channel sections including curing and providing and filling construction joints and dummy joints with approved joint filler and primer including rounding of the edges and filling the grooves 10x25mm deep at top for construction joints and 10mmx50mm deep at top for dummy joints with joint sealing compound (conforming to grade B of IS : 1834) including making necessary arrangements for expansion joints etc. all complete as per design and drawing.
	a) With steel reinforcement CRS TMT bars conforming to FE 500D or above 8 mm dia 200 center to center bothways
8.2	Providing and laying at all floors 1st quality ceramic glazed tiles in flooring/dado conforming to IS: 15622 of size 300 x 300 mm or more (thickness to be specified by the manufacturer) of approved make in all colours, shades as approved by CGEWHO/Architect, laid over 20 mm thick bed of cement mortar 1:4 (1 cement : 4 coarse sand) including pointing the joints with white cement mixed with pigment of matching shade and cleaning the surface complete in all respects. This shall be provided in wall dado and flooring of overhead water tank & Balancing tank (Basic rate of ceramic tile will be Rs. 350 per sqmtr).

8.3	Providing and laying Slip shield/Anti skid Vitrified floor tiles (thickness to be specified by the manufacturer) of 1st quality conforming to IS: 15622 of approved brand mentioned in schedule 'E' or equivalent make in all colours, shades except white, Ivory, Grey Fume Red Brown laid on 20 mm thick bed of Cement Mortar 1:4 (1 cement:4 coarse sand) including pointing the joints with white cement and matching pigments etc. complete. (Basic rate of ceramic tile will be Rs 700.00 per sqmtrs). Skirting shall be deemed to be included in same item.
a	Size of 300x300mm
b	Size of 600x600mm
8.4	Providing and fixing at all floors 1st quality Glazed Vitrified Tiles on walls conforming to IS: 15622 of 8-10 mm thickness of approved make in all colours, shades and of any size as approved by the CGEWHO/Architect in skirting, risers of steps and dados laid over 12 mm thick bed of Cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm including pointing the joints with white cement mixed with matching pigments and cleaning the surface complete in all respects. (Basic rate of ceramic tile will be Rs 700.00 per sqmtr)
8.6	Providing and fixing at all floors Polished glazed vitrified tiles (PGVT) of size 600 x 600/600x1200 mm and 8-10 mm thickness with water absorption less than 0.8% and conforming to IS:15622 in all colours, shades and of any size as approved by the CGEWHO/Architect in flooring laid over 20 mm thick bed of cement mortar 1:4 (1 cement : 4 coarse sand) and jointing with grey cement slurry @ 3.3 Kg per sqm including pointing the joints with white cement mixed with matching pigments and cleaning the surface complete in all respects. (Basic rate of Vitrified tile will be Rs 700.00 per sqmtr)
8.7	Providing and fixing at all floors Polished glazed vitrified tiles (PGVT) of size 600 x 600/600x1200 mm and 8-10 mm thickness with water absorption less than 0.8% and conforming to IS:15622 in all colours, shades and of any size as approved by the CGEWHO/Architect in skirting, risers of steps and dados laid over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3 Kg per sqm including pointing the joints with white cement mixed with matching pigments and cleaning the surface complete in all respects. (Basic rate of Vitrified tile will be Rs 700.00 per sqmtrs)
8.8	Providing and laying 18 mm thick prepolished Granite stone slab with facia/moulding of colour and shade as approved by the CGEWHO/Architect on kitchen/toilet counter slab including nosing, rounding of edges over 20 mm thick bed of cement mortar 1:4 (1 cement : 4 coarse sand) including pointing the joints with white cement mixed with pigment of matching shade and cleaning the surface complete in all respects. (Basic rate of Granite Stone will be Rs 1200.00 per sqmtrs)
8.9	Providing and fixing at all floors 18 mm thick pre polished granite stone slab of colour and shade as approved by the Architect/Project Manager in lift facia walls, dados, borders in dado including rounding of edges as shown in drawing laid on 20mm thick bed of cement mortar 1:2 (1 cement: 2 coarse sand) and jointing with grey cement slurry @ 3.3. kg per sqm including pointing the joints with white cement mixed with matching pigment and cleaning the surface complete in all respects including the cost of SS clamp as required. (Basic rate of Granite Stone will be Rs 1200.00 per sqmtr)
8.10	Providing and laying Pre-Polished Granite stone flooring, skirting, riser etc of approved quality, colour and shade in required design and patterns, in linear as well as curvilinear portions of the building including rounding off the edges as required all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed. (Basic rate of Granite Stone will be Rs 1200.00 per sqmtr)

8.11	Providing and laying Flamed Granite stone flooring, treads, open area, pool deck etc of approved quality, colour and shade in required design and patterns, in linear as well as curvilinear portions of the building including rounding off the edges as required all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed. (Basic rate of Granite Stone will be Rs 1200.00 per sqmtr)
8.12	50 mm thick Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement, including cement slurry & cost of nosing of steps etc. complete in Services shafts, Machine room and Lift Pit etc.
8.13	Providing and fixing Rubber safety surface tiles 25mm thick for Gym,complete with bevelled edge tiles for transition to grade, interlocking pins if any with BASF adhesive or its equivalent on CC 1:2:4 flooring surface as per manufactures specifications and to the satisfaction of the CGEWHO/Architect. (Brand Koochie/Sunflex)
8.14	Providing & laying 20x20x4mm Coloured glass mosaic tiles pattern conforming to IS:13630 in swimming pool set over 12mm thick cement mortar 1:3 (1 cement: 3 coarse sand) with white cement including filling the joints with appoxy Sealant grout of matching colour to match the shade of tile. (Basic rate of Coloured Glass Mosaic tile is Rs 125/- per Sft. F.O.R. at site). Mosaic tiles shall be of Mridul, Italia, Aprici brand.
9.0	uPVC DOOR WINDOWS WORK
9.1	Providing and fixing factory made uPVC white colour sliding glazed window comprising of uPVC multi-chambered frame with in-built roller track and sash extruded profiles duly extruded profiles duly reinforced with G.I section,(The thickness of GI should be selected to meet the wind load requirement as per IS 875- Part III on sash/mullion. Supplier should be submitting wind load calculation & validation complying with IS-875-III before material supply. Minimum steel reinforcement thickness of 1.2mm to 2.5mm. UPVC Windows & Doors must be fabricated with fusion welded corners & must conform to the strength requirements based on wind load as per IS 875-Part III.), Upvc glazing bead, Upvc interlock, EPDM gasket, brush seal, zinc alloyed (white powder coated)touch lock, single nylon roller, G.I fastener 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screw, etc. Profile of frame & sash shall be mitered cut and fusion welded at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod (if required)of required size and approved quality, all complete as per approved drawing and direction of Engineer-in-Charge. Company must have own production facilities (extrusion & fabrication) & control the entire cycle from Extrusion to Installation to Post Sales Service. UPVC windows & doors must be installed by profile manufacturer only.
	Handles, rubber gaskets, hinges, locks , Friction stays and required accessories shall be included and provided as per system company design. The system should be tested for Air tightness and water penetration as per EN/BS/IS standards. Weather silicon sealant of dow crowing over backer rod, to be used to make glazing weather and water tight. All windows/Doors Shall be prefabricated factory made. Glass must be DGU glass with 6+12+6 MM thick Toughened float glass (ST-167 - Sparkling Ice) of saint gobain or equivalent make.
	a) Casement Window single panel with friction hinges Made of Frame 45 x 50 mm & Sash 45 x 78 mm both having wall thickness of 1.8 (+ 0.2 mm) and single glazing bead. (Area upto 0.75 sqm)
	b) Casement Window double panels with Top fixed with friction hinges Made of Frame 65 x 58 mm, Sash 65 x 80 mm & mullion 65 x 80 mm all having wall thickness of 1.8 (+ 0.2 mm) and single glazing bead. (Area above 0.75 sqm.)

	c) Fixed Window/ Ventilator: Made of Frame 45 x 50 mm and Mullion (if required) both having wall thickness 1.8 (+ 0.2 mm) and single glazing bead. (Area upto 0.75 sqm)
9.2	<p>Providing and fixing factory made uPVC white colour sliding glazed window comprising of uPVC multi-chambered frame with in-built roller track and sash extruded profiles duly extruded profiles duly reinforced with G.I section,(The thickness of GI should be selected to meet the wind load requirement as per IS 875- Part III on sash/mullion. Supplier should be submitting wind load calculation & validation complying with IS-875-III before material supply. Minimum steel reinforcement thickness of 1.2mm to 2.5mm. UPVC Windows & Doors must be fabricated with fusion welded corners & must conform to the strength requirements based on wind load as per IS 875-Part III.), Upvc glazing bead, Upvc interlock, EPDM gasket, brush seal, zinc alloyed (white powder coated)touch lock, single nylon roller, G.I fastener 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screw, etc. Profile of frame & sash shall be mitered cut and fusion welded at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod (if required)of required size and approved quality, all complete as per approved drawing and direction of Engineer-in-Charge. Company must have own production facilities (extrusion & fabrication) & control the entire cycle from Extrusion to Installation to Post Sales Service. UPVC windows & doors must be installed by profile manufacturer only.</p> <p>The required accessories shall be included and provided as per system company design. The system should be tested for Air tightness and water penetration as per EN/BS/IS standards. Weather silicon sealant of dow crowing over backer rod, to be used to make glazing weather and water tight. All Doors Shall be prefabricated factory made. Glass must be DGU glass with 6+12+6 MM thick Toughened float glass (ST-167 - Sparkling Ice) of saint gobain or equivalent make.</p>
	a) Casement Door with top fixed, with 3D hinges: Made of Frame 65 x 73 mm having wall thickness of Frame 2.7mm (+ 0.2 mm),Sash 65 x 105 mm having wall thickness of 1.8mm(+ 0.2 mm) and Mullion 65 x 80 mm having wall thickness of 1.8mm(+ 0.2 mm) and single glazing bead/ double glazing bead.
9.3	<p>Providing and fixing factory made uPVC white colour sliding glazed window comprising of uPVC multi-chambered frame with in-built roller track and sash extruded profiles duly extruded profiles duly reinforced with G.I section,(The thickness of GI should be selected to meet the wind load requirement as per IS 875- Part III on sash/mullion. Supplier should be submitting wind load calculation & validation complying with IS-875-III before material supply. Minimum steel reinforcement thickness of 1.2mm to 2.5mm. UPVC Windows & Doors must be fabricated with fusion welded corners & must conform to the strength requirements based on wind load as per IS 875-Part III.), Upvc glazing bead, Upvc interlock, EPDM gasket, brush seal, zinc alloyed (white powder coated)touch lock, single nylon roller, G.I fastener 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screw, etc. Profile of frame & sash shall be mitered cut and fusion welded at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod (if required)of required size and approved quality, all complete as per approved drawing and direction of Engineer-in-Charge. Company must have own production facilities (extrusion & fabrication) & control the entire cycle from Extrusion to Installation to Post Sales Service. UPVC windows & doors must be installed by profile manufacturer only.</p> <p>The required accessories shall be included and provided as per system company design. The system should be tested for Air tightness and water penetration as per EN/BS/IS standards. Weather silicon sealant of dow crowing over backer rod, to be used to make glazing weather and water tight. All Doors Shall be prefabricated factory made through authorized Fabricator of System company. Glass must be DGU glass with 6+12+6 MM thick Toughened float glass (ST-167 - Sparkling Ice) of saint gobain or equivalent make. SS fly mesh shall consist average width of aperture 1.4 mm and nominal dia of wire 0.63 mm.</p>
	a) Three track three panels sliding window with fly proof S.S wire mesh(Two nos.glazed & one no. wire mesh panels): Made of Frame 118 x 50mm & Sash 45 x 60mm having wall thickness of 1.8 mm(+ 0.2mm) and single glazing bead/double glazing bead.

9.4	<p>Providing and fixing factory made uPVC white colour sliding glazed window comprising of uPVC multi-chambered frame with in-built roller track and sash extruded profiles duly extruded profiles duly reinforced with G.I section,(The thickness of GI should be selected to meet the wind load requirement as per IS 875- Part III on sash/mullion. Supplier should be submitting wind load calculation & validation complying with IS-875-III before material supply. Minimum steel reinforcement thickness of 1.2mm to 2.5mm. UPVC Windows & Doors must be fabricated with fusion welded corners & must conform to the strength requirements based on wind load as per IS 875-Part III.), Upvc glazing bead, Upvc interlock, EPDM gasket, brush seal, zinc alloyed (white powder coated) touch lock, single nylon roller, G.I fastener 100 x 8 mm size for fixing frame to finished wall and necessary stainless steel screw, etc. Profile of frame & sash shall be mitered cut and fusion welded at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod (if required) of required size and approved quality, all complete as per approved drawing and direction of Engineer-in-Charge. Company must have own production facilities (extrusion & fabrication) & control the entire cycle from Extrusion to Installation to Post Sales Service. UPVC windows & doors must be installed by profile manufacturer only.</p>
	<p>The required accessories shall be included and provided as per system company design. The system should be tested for Air tightness and water penetration as per EN/BS/IS standards. Weather silicon sealant of dow crowing over backer rod, to be used to make glazing weather and water tight. All Doors Shall be prefabricated factory made through authorized Fabricator of System company. Glass must be DGU glass with 6+12+6 MM thick Toughened float glass (ST-167 - Sparkling Ice) of saint gobain or equivalent make. SS fly mesh shall consist average width of aperture 1.4 mm and nominal dia of wire 0.63 mm.</p>
	<p>a) Three track three panels sliding door with fly proof S.S wire mesh(Two nos. glazed & one no. wire mesh panels): Made of Frame 118 x 50 mm having wall thickness of 1.8mm(+0.2mm) & Sash 45 x 90 mm having wall thickness of 1.8mm(+ 0.2mm) and single glazing bead/double glazing bead.</p>
	<p>b) Four track Four panels sliding door with fly proof S.S wire mesh(Three nos. glazed & one no. wire mesh panels): Made of Frame 170 x 50 mm having wall thickness of 1.8mm(+0.2mm) & Sash 45 x 90 mm having wall thickness of 1.8mm(+ 0.2mm) and single glazing bead/double glazing bead.</p>
9.5	<p>Deduct for providing 6mm thick Frosted glass glass panes instead of DGU 6+12+6 mm thick Toughened glass in glazed doors, windows and clerestory window shutters.</p>
10.0	FINISHING
10.1	<p>Providing & applying Ready mix plaster with sand ready mix dry mortar in bags for plastering from the approved manufacturer in readymade PP bags of high quality laminated bags/Ad star bags. The specifications for cement used should be in line with IS 4031-1988 for physical tests and IS 1542-1977 & IS 2116-1980 accordingly. The power additives used should be of good quality make. The Ready Mix Mortars should complies to IS 2250-1981 with water to power ratio of 0.16-0.19 and having min 28 day pullout strength requirement of >0.3 MPa (as per ASTM D 7234-12) and 28 days compressive strength of > 5MPa (as per ASTM C 109-95). Also product should meet the VOC standards of <1% by Mass, including scaffolding, tool & plants etc Complete</p>
a)	12 mm Ready Mix plaster on 230mm thick brick walls.
b)	15mm Ready Mix plaster on the rough side of single or half brick wall.
c)	15mm Ready Mix plaster on the rough side of single or half brick wall mixed with waterproofing compound as per manufacturer recommendations and finished with a floating coat of neat cement.(In Plumbing Shafts)
d)	6 mm Ready Mix plaster to ceiling including grooves.

e)	18 mm Ready Mix plaster in two coats under layer 12 mm thick Ready Mix plaster and a top layer 6 mm thick Ready Mix plaster mixed with approved water proofing compound 2% by weight of cement and finished smooth on the external surface of buildings for all heights and levels including forming grooves, scaffolding etc as per drawings. (External Plaster shall not been done on the external face of RCC surface casted with Aluminium Shuttering. The areas which shall be necessary to cast with wooden/Ply shuttering shall be plastered)
10.2	Providing and fixing 150 mm wide chicken wire mesh of 22 gauge on the wall/column/beam junctions and over PVC conduit and GI/CPVC pipe with nails etc. complete.
10.3	Providing and applying Cement based putty in line and level over plastered surface to prepare the surface even and smooth complete and to the satisfaction of CGEWHO/Architect as follows:
a	For internal walls
b	For external walls (External grade putty)
10.4	Providing POP 125 mm cornice on the junction of beam and slab in line and level as per the design shown in drawing.
10.5	Wall painting with Premium acrylic emulsion paint of interior grade having VOC (Volatile Organic compound) content less than 50 grams /litre of approved brand and manufacture, including applying 2 or additional coats where ever required to achieve even shade and colour. (as approved by CGEWHO/Architect) including one priming coat with primer of approved brand and manufacture, having low VOC content with water thinnable cement primer on wall surface having VOC content less than 50 grams/lite.
10.6	Finishing exterior walls with Textured painting (exterior grade) applied @ 3.28 kg/10 sqm over and including priming coat applied @ 2.20 lt/10sqm of approved make shade and colour on all heights and levels. The rate shall include all operations of work & scaffolding required for painting at all heights and as per specifications.
10.7	Applying priming coat with ready mixed Red oxide zinc chromatic primer with VOC content less than 250 grams/litre of approved brand and manufacture on steel work.
10.8	Painting with synthetic enamel paint having VOC content less than 50 grams/litre of approved brand and manufacture including applying 2 or additional coats where ever required to give an even shade with two or more coats on new work.
10.9	Providing , applying and finishing the door Shutter & frame with two or more coats of PU Matt polish complete on new works including a coat of wood filler etc
10.10	Applying priming coats with Primer of approved brand and manufacture having ready mixed pink or grey primer on wood work having VOC content less than 50 grams/litre
10.11	Two or more coats of White washing with lime to give an even shade on New work complete.
10.12	Providing and applying min 6mm th POP punning in line and level over plastered surface to prepare the surface even and smooth complete and to the satisfaction of CGEWHO/Architect as shown on drawings

[illegible]

11.4	TERRACE ROOF TREATMENT
a	Providing and laying 3mm thick APP (Atactic Polypropylene Polymer) modified prefabricated five layer, 3 mm thick water proofing membrane, black finished reinforced with glass fibre matt consisting of a coat of bitumen primer for bitumen membrane @ 0.40 litre/sqm by the same membrane manufactured of density at 25°C, 0.87 - 0.89 kg/litre and viscosity 70 - 160 cps. Over the primer coat the layer of membrane shall be laid using butane torch and sealing all joints etc., and preparing the surface complete. The vital physical and chemical parameters of the membrane shall be as under : Joint strength in longitudinal and transverse direction at 23°C as 350/300 N/5 cm. Tear strength in longitudinal and transverse direction as 60/80N. Softening point of membrane not less than 150°C. Cold flexibility shall be upto -2°C when tested in accordance with ASTM, D - 5147. The laying of membrane shall be got done through the authorised applicator of the manufacturer of membrane.
b	Covering top of membrane with Geotextile , 120 gsm non woven, 100% polyester of thickness 1 to 1.25 mm bonded to the membrane with intermittent touch by heating the membrane by Butane Torch where ever required or as per manufactures recommendation.
c	Providing and laying minimum 50 mm Screed concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) mixed with crystalline waterproofing, above the water proofing membrane as a protection layer to water proofing in slope as per directions of Architect/CGEWHO.
d	Providing & Fixing Granite Stone in flooring and skirting in different shades and pattern as shown on drawing and approved by CGEWHO/Architect over 20 mm (average) thick base laid over and jointed with cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete with base of cement mortar 1:4 (1 cement : 4 coarse sand) (Basic Rate Rs. 1200 per sqmtrs) in front of pool area except Pool deck.
11.5	Making khurras 45 x 45 cm with average minimum thickness of 5cm cement concrete 1:2:4 (1 cement : coarse sand : 4 graded stone aggregate of 10 mm nominal size) over P.V.C sheet 1m X 1m X400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement rounding the edges and making and finishing the outlet complete.
11.6	Injection Grouting with cement slurry and admixed with non shrinking grouting compound through nozzle under pressure by pump at every 1m vertical and horizontal distance to all RCC structure, over ground (water retaining structures like OHT, Swimming pool and balancing tank). the nozzle shall be sealed off after injection operation is over with pozzolith 100 HE admixed with cement.
12.0	ALUMINIUM WORK
12.1	Providing and fixing anodised aluminium box section frame and shutters with 75 mm wide louvers including necessary hinges, handles, locks and all fittings as per drawings for shafts coverings. (Electric, LV, Plumbing etc shafts)
a)	Aluminum Frame in approx 50mm x 100 mm section
b)	Aluminum Door panel in approx 50 mm x 50 mm section
12.2	Providing and fixing Red colour powder coated (60 micron) aluminium box section frame and shutters with 5 mm thick clear glass including necessary hinges, handles, tower bolts, mortised lock etc all fittings as per drawings for shafts coverings. (fire shafts)
a)	Aluminum Frame in approx 50mm x 100 mm section
b)	Aluminum Door panel in approx 50 mm x 50 mm section

12.3	Filling the gap in between aluminium frame and adjacent RCC/Brick/Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of CGEWHO/Architect complete.
a)	upto 5mm depth & 5mm width
12.4	Providing and fixing machine moulded aluminium covering of approved patterns & design, made out of machine holed for receiving dashed fastners, over expansion joints on vertical surfaces /ceiling floors , the fixing on plate in one row on one side of jointing shall be done with stainless steel dash fastners of 8mm dia and 75 mm long bolt including providing aluminium washers 2mm thick & 15mm dia, at a staggered pitch of 200mm centre to centre including drilling holes in the receiving surface and providing expandable plastic sleeves in holes etc as per direction of CGEWHO/Architect.
	Anodised aluminium sheet 2.5 mm thick (anodised transparent or dyed to required shade according to IS: 1868, minimum anodic coating of grade AC 15)
	Powder coated aluminium sheet 2.5 mm thick (minimum thickness of powder coating 50 micron)
	Providing and fixing of 40 to 200mm wide expansion joint system related with floor location as per drawings and direction of Engineer-In-Charge. The joints system will be of extruded aluminum base members, self aligning / self centering arrangement and support plates etc. as per ASTM B221-02. The system shall be such that it provides floor to floor /floor to wall expansion control system for various vertical localtion in load application areas that accommodates multi directional seismic movement without stress to it's components. System shall consist of metal profiles with a universal aluminum base member designed to accommodate various project conditions and finish floor treatments. The cover plate shall be designed of Aluminium of required thickness and width to satisfy projects movement and loading requirements and secured to base members by utilizing manufacturer's pre-engineered self-centering arrangement that freely rotates / moves in all directions. The Self – centering arrangement shall exhibit circular sphere ends that lock and slide inside the corresponding aluminum extrusion cavity to allow freedom of movement and flexure in all directions including vertical displacement. Provision of Moisture Barrier Membrane in the Joint System to have watertight joint is mandatory requirement all as per the manufactures design and as approved by Engineer -in- Charge . (Material shall confirm to ASTM 6063.)
13.0	MISCELLANEOUS WORK
13.1	Making plinth protection 50 mm thick of cement concrete 1:3:6 (1 cement: 3 coarse sand: 6 graded stone aggregate 20 mm nominal size) over 75 mm bed of dry brick ballast 40 mm nominal size well rammed and consolidated and grouted with fine sand including finishing the top smooth, centering and shuttering complete.
13.2	Signages with back lit stainless steel letters min 2'-0" high in hindi and english and CGEWHO logo to be fixed as per design and drawing complete.
13.3	Numbering of each room with stainless steel plate with numbers fixed to door complete as per design.
13.4	Providing and laying Foam concrete in sunken portion
13.5	Core cutting in RCC structure of any dia required as per specification / drawing including the cost of supplying and applying Acrylic Polymer mortar for filling gap around the pipe and core hole as per specifiaction.
13.6	Providing and laying 110mm dia uPVC sleeves in the walls for Copper pipes of Split AC. The Sleeve shall be closed by means of suitable PUF foam and finished with respective wall finishing. The Drain pipes shall be laid from IDU to nearest floor trap/man hole etc complete
13.7	Providing and laying 110mm dia or more uPVC sleeves in the beams for soil, waste & vent pipes at the desired location as per site .

	Gypsum board Ceiling
14.2	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with plastic emulsion paint over a coat of suitable primer.
a)	Fully Perforated Gypsum Plaster Board of size 1200 x 2400x12.5 mm having approx. 15 % perforated area with perforation size and pattern as approved by the Engineerincharge and as per manufacturer's specification, with all 4 side tapered and backed by acoustical tissue with NRC value not less than 0.60
b)	Gypsum Plaster False Ceiling with/without Cove as shown in drawing.
14.3	Providing and fixing Moisture Resistant Gypsum Board Access Panel including Powder coated Aluminium framing & stiffeners, push-catch closing mechanism with door retaining safety cable and hook, concealed locking arrangement complete. Single layer of 12.5 mm tapered edge frame shall be screw fixed to ceiling section with 25 mm dry wall screws at 230 mm centers. The work shall also include jointing and fixing to a flush finish of tapered edges of Gypsum board with recommended filler, paper tapes and two coats of putty/primer suitable for gypsum board to achieve a smooth finish as per manufacture's specificationscomplete in all respect as directed by Engineer-in-charge.
a)	950x1200 Moisture Resistant Gypsum Board Access Panel
14.4	Aluminium Louvered Wall Panelling
a)	Providing and fixing of interlocking Aluminium fluted wall panelling with 20 mm wide and 20mm deep flutes with decorative veneer finish as per approved make, colour and texture over required GI/aluminium frame work as per vendor design, drawings, specification and direction of CGEWHO/Architect.
b)	Providing and fixing of Mirror of size as mentioned in drawing in Aluminium fluted wall panelling over the base of 10mm thick water proof ply backing and required GI/aluminium frame work as per vendor design, drawings, specification and direction of CGEWHO/Architect.

15.0	ELECTRICAL IN SWIMMING POOL
15.1	Providing and fixing conduits in walls, wiring, switches, under water lights & other light fittings etc as per requirements of Architect/CGEWHO
16.0	PLUMBING
16.1	Providing and fixing water supply, drainage arrangements and connections for filling the pool, from pool to balancing tank and back to pool after filtration, pumps, valves and drainage pipes etc as per requirement of Vendor/Architect/CGEWHO
16.2	Providing & fixing SFRC (steel fibre reinforced (heavy duty) manhole cover & frame of size 605mm x 455mm on Balancing tank.
17.0	Pool Equipments & Accessories:
17.1	Filters (Vertical Type)
	TOTALLY ANTI-CORROSIVE filter 1200mm dia manufactured with fibre glass , bobin wound,fitted with collector arms and diffuser made from unplasticised PVC and Polypropelene, Capable of accomodating a flow rate of 34m³/hr @ 30m³/hr/m² Complete with lid in polyester resin and fibre glass, manual air purge cap for sand discharge and PVC union connection for inlet and outlet of 75 mm Working pressure 2.5kg/cm² complete
	Make: Astral Spain / Proteam / Certikin /Equivalent Spain manufacturer
ii)	Supply ,installtion ,testing and commissioning of PVC (10Bar) frontal piping, butterfly valve of 75 mm size
	Make: Cepex
iii)	Silica sand media for filter with granulometry between 0.4 and 0.8mm
iv)	Centrifugal pumps made of Plastic body, with built in 8 lit cap. Strainer shaft in AISI-420 stainless steel .Mechanical seal in AISI-316 SS & tungsten with in built motor ,5 hp 400 volts,
	Flow rate : 72 m³/hr Head : 20 mtrs
	Made in Spain : Doll/ Calpeda/Speck/ Equivalent
v)	Main Drain Grates 300 mm x 300 mm SS 304 support frame, grate & fixing screws.
	Max. Recommended flow 83 m³/hr
vi)	White ABS plastic bottom inlet for concrete with S.S. screws and regulable
	flow. Flow/ inlet = 9000l/hr
	Made in Spain Code: 00303
	Made in Spain Astral / Auric
vii)	Chemical Dosing system for pH,Soda Ash and Chlorine Constant flow membrane dosing pump, electronic low voltage circuit with, 220 Volt in built PID controler IP-54 protection capable of 5 lit/hr @ 5kg/cm²
	Make: Seco / Techmina/ Ewaki
viii)	Semi transparent polyethelene tank so that levels can be checked easily, capacity of tank 100lts.
	local make Syntex
	Ladders & Gratings
ix)	Strandard model stainless steel AISI-316 ladders, 3 steps width: 500mm, handrails dia 43mm stainless steel Split type of ladder. non-slip steps, provided with electrical earthing 5 steps connection and anchoring fixtures.
	GRAB RAILS In SS-316 (4 PAIR)
	Made in Spain Astral / Auric/Metalast

x)	Modular Gratings made in UV stabilized Polypropelene. Made of individual units slotted together to form a flexible continuous run.
	Ht.22mm, width: 295mm
	Made in Spain Code: 00220
	Made in Spain Astral / Proteam
	MAINTENANCE ACCESSORIES
xi)	Metallic vacuum head in polished extruded aluminium and chrome plated brass and with 2" connection towed by cable.
	Made in Spain Code: 01358
	Made in Spain Astral /Certikin/ Proteam
xii)	Extensible handles for cleaning attachments in anodized aluminium which can be adapted to the entire range of cleaning equipment, brushes, leaf skimmers and scoops.5mts. Long
	Made in Spain Code: 01362
	Made in Spain Astral /Certikin/ Proteam
xiii)	Transparent blue plastic vacuum hose 1-1/2" dia
	30mtrs long including hose cuffs for connection to
	suction inlets.hose cuff(04 no.s)
	Made in Spain Code: 01375 +01387
	Made in Spain Astral /Certikin/ Proteam
xiv)	Deep bag net made in polypropelene and white polyester netting butterfly nut connection
	Made in Spain Astral /Certikin/ Proteam
xv)	Surface net made in polypropelene and white polyester netting butterfly connection
	Made in Spain Code: 01398
	Made in Spain Astral /Certikin/ Proteam
xvi)	Curved brushes made in polypropelene for pool basins and scum liners
	Made in SpainCode: 01404
	Made in Spain Astral /Certikin/ Proteam
xvii)	Algae brushes with stainless steel bristles with handle
	Made in Spain Code: 01407+01365
	Made in Spain Astral /Certikin/ Proteam
xviii)	Test kit for free chlorine & pH
	Made in Spain Code: 25353
	Spare 250 ml reagent bottles
	Made in Spain Astral /Certikin/ Proteam
xix)	ABS white plastic Suction point of 1-1/2 inch Code no. 00301
	Made in Spain Astral / Auric/ Maberplast
xx)	wall conduit for suction nozzles PVC Code no. 15658
	Made in Spain Astral /Certikin/ Proteam
xxi)	local items (Plant room will be max. 15mtrs from main pool)
	Inter connecting piping for inside and out side of swimming pool , plant room
	with all fitting , pipes and valves
	125mm/90 inlet pipe PVC 10 bar
	110 mm Drain pipe PVC 10 bar

	110 mm Overflow pipe PVC 10 bar
	75 mm suction pipe line for suction sweeper
	Pump Suction Header 125mm PVC
	Pump Discharge Header 125 mm PVC
	Prince / Supreme/ Finolex
	All Valves Shall be of Cepex Europe
	Electrical Pannel with relay & contactor for pumps and
	MCB for all lights along with ELCB
17.2	Electrical Equipment / Lights
i	Standard Underwater light 300W x 12 V in white ABS rim, niche in polypropylene with 2.5 meter cable, Made in Spain Code: 07844 Made in Spain Astral / Proteam/ ERI
ii	Deck Box in ABS with 3 entries of 3/4" Make: Astral, Spain Code: 15861 Made in Spain Astral / Proteam/ ERI
iii	Flexible conduit hose 1 m long for connecting light to the box. 3/4" and PG - 25 threaded ends Made in Spain Code: 28138 Made in Spain Astral / Proteam/ ERI
iv	Electronically regulated low voltage swimming pool transformer with IP - 55 enclosure, electrostatic protective shield between primary & secondary windings, internal thermal protection against overload, 400 VA, 240 V primary voltage and 12 secondary voltage. Made in Spain- Polylux
v	Additional provision in Electrical panel for the U/W lights and individual MCB for lights and Transformer fixing.
18	Furniture-
	Providing and placing in location sun poolside chaise lounges of size 19" H x 24" W x 77" L crafted with Handwoven with Synthetic rattan wicker wrapped around an inner MS frame, weather, water and UV-resistant, features five reclining positions (including fully flat) with cushions. (The basic price of lounge shall be Rs 25000/- per piece). Total nos of loungers required 6 nos. of dreamline, loomcraft, weavcraft make

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION									
SCHEDULE OF FINISHES- CLUB									
SCHEDULE D3B									
S.N.	Details	Flooring	Wall finishes		Door Frames /Shutters		Windows/ Ventilators	Railing	
			Interior	Exterior					
	CLUB								
1	Entrance Lobby, Passage, Front & Rear Entrance steps, ramps, Verandah, landing, planter & Rear	Polished Granite Stone with matching skirting.	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion paint with primer & POP cornice	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	uPVC Door/W/indow with DGU Glass and Wire mesh shutters	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters	Stainless Steel Railing		
2	Shops	Polished glazed Vitrified tiles (PGVT) 600mm X 600mm with matching skirting.	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion paint with primer & POP cornice	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	M S Rolling Shutter	-	-		
3	Office Rooms	Polished glazed Vitrified tiles (PGVT) 600mm X 600mm with matching skirting.	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion paint with primer & POP cornice	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	uPVC Door/W/indow with DGU Glass and Wire mesh shutters	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters	-		
4	Toilets, change rooms, verandah, Janitor etc.	Anti Skid glazed Vitrified Tiles 600mm X 600mm.Red granite on RCC counter.	Glazed Vitrified Tiles 600mm x 1200mm upto False ceiling . White wash on walls & ceiling (above false ceiling).	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	Enamel Painted Mango wood Frames and both sides Laminated Flush Door shutters.	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters	-		
5	Kitchen & Kitchen courtyard	Anti Skid glazed Vitrified Tiles 600mm X 600mm on floors. Red/ Black Granite on RCC Platform.	Glazed Vitrified Tiles 600mm x 600mm upto 600mm above counter and areas shown in drawings. Cement base putty, 2 coat of Low VOC Acrylic	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	Enamel Painted Mango wood Frames and both sides Laminated Flush Door shutters.	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters	-		
6	Hall, Kids Indoor Game, passage.	Polished glazed Vitrified tiles (PGVT) 600mm X 1200mm with 3mm spacer filled with epoxy grout or matching colour, with matching skirting.	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion paint with primer & POP cornice	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	Enamel Painted Mango wood Frames and both sides Laminated Flush Door shutters.	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters			
7	Card Room, Room	Polished glazed Vitrified tiles (PGVT) 600mm X 1200mm with 3mm spacer filled with epoxy grout or matching colour, with matching skirting.	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion paint with primer & POP cornice	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	Enamel Painted Mango wood Frames and both sides Laminated Flush Door shutters.	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters			
8	Gym	Rubber Flooring over VD flooring complete with matching Wooden Skirting.	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion paint with primer & POP cornice	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	Enamel Painted Mango wood Frames and both sides Laminated Flush Door shutters.	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters			
9	Pool Plant Room.	Kota Stone Flooring with Matching Skirting	Cement base putty, 2 or more coats of Water proofing cement paint	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	Enamel Painted Mango wood Frames and both sides Laminated Flush Door shutters.	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters	SS /Glass Railing		
10	Main Staircase	Granite Flooring, single stone in riser and treads & Matching skirting.	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion smooth paint with primer	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty		uPVC Windows with DGU Glass with Fly proof Wire mesh shutters	Powder Coated M. S. Railing		
11	Staircase attached to Kitchen and Mumty	25 mm thick Kota stone flooring, skirting, riser and treads	Cement base putty, 2 or more coats of Low VOC Premium Acrylic emulsion smooth paint with primer.	Exterior weather proof Texture paint over a coat of primer & exterior grade cement based putty	Fire Check Door	uPVC Windows with DGU Glass with Fly proof Wire mesh shutters	Powder Coated M. S. Railing		



GARG & ASSOCIATES
 403/303, 3RD FLOOR
 CONNAUGHT PLACE
 NEW DELHI-110001
 GAGAN GARG
 CA-NO.-98/25499

Garg and Associates

Contractor

CGEWHO

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION

SCOPE OF WORK

INTERNAL PLUMBING FOR CLUB BUILDING

SCHEDULE D3C

S. NO.	Description
	Core cutting of required size with its filling with epoxy grout and waterproofing after fixing the pipes is included in the scope of work.
	In Cold water supply- CPVC pipes shall be used inside the building and GI pipes shall be used in shafts and terrace area. In Hot water supply with Insulation- CPVC pipes shall be used inside the building & shafts and GI pipes shall be used in terrace area.
	All the core cuts/cutouts for pipes shall be sealed with Fire seal/Promoseal.
1	<u>SANITARY FIXTURES</u>
1.1	Supply, fixing, testing and commissioning White Colour vitreous china wall hung European type WC with 'P' trap straight/offset type flexible single body push fit type WC - Connection socket with lip seal and body made of PP with C.P. bolts, nuts, C.I. chair or other hanging arrangement, with solid bakelite seat and slow falling cover, C.P. brass hinges rubber buffers with accessories, C.I./M.S. brackets painted with two coats of enamel paint of approved shade over a coat of primer. C.P. brass screws, including cutting and making good the wall and floors wherever required.
1.2	Providing, fixing, testing & commissioning of Ceramic cistern-Dual Flush for back to Wall Hung WCs for standard Height execution front flush, Capacity of 10 Litres with continuous adjustable short flush vol. of approx 3-4Ltrs or a continuously adjustable full flush volume of 6-10 Ltrs.) suitable for mechanical or Bowden wire actuation technology comprising of corner valve (Gun Metal), premounted water supply with 1/2 female thread, flushing pipe bow, flushing pipe extension, fixing material, without actuator plate and assembly including fixing frame, fixing set complete, providing protection cover over cistern, Body covered with Anti sweat thermocol cover cutting and making good the walls wherever required.
1.3	Providing and fixing Wash basin with C.I. brackets, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require with CP bottle trap and basin size
1.3.1	White Vitreous China Oval Shape Under Counter Wash basin size 536x435 mm
1.4	Providing and fixing Stainless Steel A ISI 304 (18/8) Kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug, 40 mm CP waste grating with PVC flexible waste pipe including painting of fittings and brackets, cutting and making good the walls wherever required :
a)	Kitchen sink double bowl without drain board of size 510 x 1145 & bowl depth 250 mm
1.5	Providing & fixing C.P. Brass health faucet for ablution with 1 meter long PVC tube, hand shower, couplings, wall hook and other accessories.
1.6	Providing and fixing C.P. brass, bib cock of approved quality conforming to IS : 8931
a	15 mm nominal bore
1.7	Providing and fixing C.P. brass angle valve for basin mixer, RO water point, geyser points and flushing cisterns of approved quality conforming to IS:8931 a) 15 mm nominal bore
a	15mm nominal bore

1.8	Providing, & Fixing C.P. brass single lever /single hole sink mixer with swinging casted spout, counter/table mounted, wall flanges & copper connection complete including cutting and making good the walls wherever required.
1.9	Fixing C.P. brass single lever / single hole basin mixer with spout of required size with 450mm long copper connection pipe and brass Nuts, wall flanges including cutting and making good the walls wherever required.
1.10	Providing and fixing C. P. Single lever Concealed divertor with exposed parts, CP Over head shower rod and shower head ,C.P. bath spout, CP Hand shower with connection pipe & wall bracket and wall flanges including cutting and making good the walls where required.
1.11	Providing and fixing C.P brass Two way bib cock of approved quality conforming to IS standards and weighing not less than 810 gms.
1.12	Providing and Fixing of Braided Hoses for Connection to Geyser, Wash basin, Sink and Flushing Cistern etc
1.13	Providing & Fixing S.S. (304) Double Coat hook / robe hook with necessary SS screws.
1.14	Providing and Fixing of SS Tower Rail with necessary SS screws.
1.15	Providing and Fixing of SS Soap Dish with necessary SS screws.
1.16	Providing and fixing stainless steel jali (grating) without hole for waste pipe for floor trap & floor drain
a)	Size 125mm dia flat cover matt finish
b)	Size 125mm dia cockroach trap
1.17	Providing and fixing of 750 mm x 600 mm beveled edge Mirror of Modi guard or equivalent, mounted on BWP Ply/hardboard and Aluminium beading min 40mm wide fixed with necessary SS screws and washers complete.
1.18	Providing and fixing white vitreous china battery based infrared sensor operated urinal of approx. size 610 x 390 x 370 mm with division plates having pre & post flushing with water (250 ml & 500 ml consumption), having water inlet from back side,with fittings, standard size C.P. brass flush pipe, spreaders with unions and clamps (all in C.P. brass) with waste fitting as per IS : 2556, C.I. trap with outlet grating and other couplings in C.P. brass, including fixing to wall with suitable brackets all as per manufacturers specification and direction of CGEWHO/Architect (KOHLER CAT NO: K-26474IN-ER-0 WITH URINAL SENSOR DC:24199IN-C01-CP,AC+DC:24199IN-C03-CP)
1.19	Providing & Fixing fully automatic No Touch hand dryer of ABS body, suitable to operate on 220 V / 50 Hz AC power, 1650 Watt, having < 30 sec drying time, 1 min. auto cut complete with brackets.(Kohler K-5486T-2-SH)
1.20	Providing and fixing Stainless Steel (SS) liquid soap container of standard shape with bracket of the same materials with snap fittings of approved quality and colour.
1.21	Supply, Receiving, Storing & Fixing of Handicapped toilet vitreous China Sanitary fixturs and CP fitting and other accessories Equivalent to Model No : Hindware Cat no. 70002 (Matrix Set-1) . Each Matrix Set shall comprised (Wash Basin 65 x 35 with one pair mounting brackets, EWC & Cistern complete with fittings & seat cover, one no hinged rail 76 cm and five nos of grab rails 60 cm). complete all respect.

1.22	Providing and Fixing of 2 nos. Grab bars vertical swing type in Two toilets only at each floor as per the Plumbing Inventory list.
2	INTERNAL WATER SUPPLY SYSTEM
2.1	Providing and fixing CPVC pipes complete with fittings including trenching and refilling etc as follows:
2.1.1	Providing and fixing CPVC pipes CTS-SDR 11, class-1 CPVC Pipes (pressure rating 28 kg/cm ² at 23oC and 7 kg/cm ² at 82oC) confirming to IS : 15778-2007, ASTM D-2846, complete including trenching and refilling etc. complete with Fittings ie tees, elbows, sockets, clamps etc in all respects and as per instructions of the CGEWHO/Architect.
2.1.1.1	20mm dia
2.1.1.2	25mm dia
2.1.1.3	32mm dia
2.1.1.4	40mm dia
2.1.1.5	50mm dia
2.1.1.6	65mm dia
2.1.1.7	80mm dia
2.1.2	Providing, fixing chlorinated polyvinyl Chloride (CPVC) pipes CTS-SDR 11, class-1 CPVC Pipes (pressure rating 28 kg/cm ² at 23oC and 7 kg/cm ² at 82oC) confirming to IS : 15778-2007, ASTM D-2846, having thermal stability for hot and cold water supply including all CPVC plain and brass threaded fittings including fixing the pipes 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 CGEWHO/Architect.
	Concealed work , including cutting chases and making good the walls etc.
2.1.2.1	15 mm nominal outer dia Pipes
2.1.2.2	20 mm nominal outer dia Pipes
2.2	Providing, fixing chlorinated polyvinyl Chloride (CPVC) pipes CTS-SDR 11, class-1 CPVC Pipes (pressure rating 28 kg/cm ² at 23oC and 7 kg/cm ² at 82oC) confirming to IS : 15778-2007, ASTM D-2846, having thermal stability for hot and cold water supply including all CPVC plain and brass threaded fittings including fixing the pipes with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of CGEWHO/Architect.
	Internal work
2.2.1	15 mm nominal outer dia Pipes
2.2.2	20 mm nominal outer dia Pipes
2.2.3	25 mm nominal outer dia Pipes
2.2.4	32 mm nominal outer dia Pipes
2.2.5	40 mm nominal outer dia Pipes
2.2.6	50 mm nominal outer dia Pipes
2.3	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, i/c cutting and making good the walls etc.
	Internal work - Exposed on wall/Terrace
2.3.1	20 mm dia nominal bore
2.3.2	25 mm dia nominal bore
2.3.3	32 mm dia nominal bore
2.3.4	40 mm dia nominal bore
2.3.5	50 mm dia nominal bore
2.3.6	65 mm dia nominal bore
2.3.7	80 mm dia nominal bore
2.3.8	100 mm dia nominal bore

2.3.9	150 mm dia nominal bore
2.4A	Providing and fixing insulation for hot water pipe line with fibre glass wool blankets/mats of 50mm thickness including cleaning of pipes, wrapping of mats around the pipe with 50mm overlap on all the sides and sealing the joints with POP tape, stitching 24 SWG x 20mm G.I wire mesh netting over the mat, complete as per requirement. (Insulation blankets should have a density of 24 Kg/m ³) (Twiga make or equivalent).
2.4.1	20 mm dia nominal bore
2.4.2	25 mm dia nominal bore
2.4.3	32 mm dia nominal bore
2.4.4	40 mm dia nominal bore
2.4.5	50 mm dia nominal bore
2.4 B	Providing and cladding 24 gauge aluminum sheets with 50 mm overlap and fixing with self tapping recessed screws, complete as per requirements over the insulated hot water pipes .
2.4.1	20 mm dia nominal bore
2.4.2	25 mm dia nominal bore
2.4.3	32 mm dia nominal bore
2.4.4	40 mm dia nominal bore
2.4.5	50 mm dia nominal bore
2.4.6	65 mm dia nominal bore
2.5	Providing and fixing nitrile rubber insulation on hot water supply / return pipes.
2.5.1	15 mm dia (13 mm thickness)
2.5.2	20 mm dia (13 mm thickness)
2.6	Providing & fixing full way lever operated forged brass ball valve of brass body with forged brass hard chromeplated steel ball tested to a pressure not less than 15 Kg / sqcm with threaded / flanged joints complete with nuts, bolts, gaskets, washers etc. as per direction of CGEWHO/Architect.
2.6.1	15 mm dia. Nominal bore
2.6.2	20 mm dia. Nominal bore
2.6.3	25 mm dia. Nominal bore
2.6.4	32 mm dia. Nominal bore
2.6.5	40 mm dia. Nominal bore
2.6.6	50 mm dia. Nominal bore
2.6.7	65 mm dia. Nominal bore
2.6.8	80 mm dia. Nominal bore
2.6.9	100 mm dia. Nominal bore
2.7	Supply & fixing in position ISI marked cast iron double flanged butterfly valves (PN 1 MPa) as per IS:13095, with SS disc, shaft, seating rings, internal fastening, nitrile rubber lining, nuts, bolts including transporting to worksite, 3 mm thick rubber gaskets etc. including testing, Complete as per drawings & directions of CGEWHO/Architect
2.7.1.1	65 mm dia. Nominal bore
2.7.1.2	80 mm dia. Nominal bore
2.7.1.3	100 mm dia. Nominal bore
2.7.1.4	150 mm dia. Nominal bore
2.8	Providing and fixing Forged Brass pressure reducing valve with strainer delivering desired rate of flow with flanged connection. The complete system is tested to a pressure not less than 10 Kg / Sq.cm and suitable to reduce the pressure upto 1 Kg/Sq.cm) including flanges / unions, nuts, bolts and washers complete as required.
2.8.1	15 mm dia
2.8.2	20 mm dia

2.8.3	25 mm dia
2.9	Making connection of G.I. distribution branch with G.I. main of following sizes by providing and fixing tee, including cutting and threading the pipe etc. complete :
2.9.1	25 to 40 mm nominal bore
2.9.2	50 to 80 mm nominal bore
2.10	Providing and fixing G. I. Union in G. I. pipe including cutting and threading the pipe and making long screws etc. complete (new work)
2.10.1	15 mm nominal bore
2.10.2	20 mm nominal bore
2.10.3	25 mm nominal bore
2.10.4	32 mm nominal bore
2.10.5	40 mm nominal bore
2.10.6	50 mm nominal bore
2.10.7	65 mm nominal bore
2.11	Providing & fixing Auto Air vent for cold water supply risers, suitable for pressure not less than 15 Kg/Sq.cm.
2.11.1	15 mm dia
2.11.2	20 mm dia
2.12	Providing and fixing in position of approved quality high pressure rated Gun Metal Float Valve with copper ball float and brass rods of required length suitable for test pressure of not less than 15 Kg/sqcm of the following sizes:
2.12.1	32 mm dia
2.12.2	40 mm dia
2.13	Cutting holes up to 30 X 30 cm in walls including making good the same :
2.13.1	With common burnt clay F.P.S. (non modular) bricks
2.14	Constructing brick masonry chamber 300 x 300 x 500 mm, inside with F.P.S. brick work in cement mortar 1: 4 (1 cement : 4 coarse sand) for Stop Cock , with C. I. surface box 100 x 100 x 75 mm (inside) with hinged cover fixed in cement concrete slab 1:2:4mix (1cement : 2 coarse sand:4 grade stone aggregate 20mm nominal size); necessary excavation, foundation concrete 1:5:10 (1 cement :5 fine sand: 10 graded stone aggregate 40mm nominal size) and inside plastering with cement mortar 1 : 3 (1 cement : 3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design
2.14.1	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5
3	<u>DRAINAGE SYSTEM</u>
3.1	Providing, fixing, jointing and testing in position of ISI marked UV stabilized UPVC pipes for soil, waste, and vent, Type-B as per IS : 13592 suitable for rubber ring joints, including all neccessary specials and fittings (confirming to IS:14735) i.e. bends, tees, junctions (with or without doors), reducers, WC connectors, couplers, expansion joints / bellows, cowels, clamps, rubber rings, clean outs etc. fixing at wall/ ceiling/ floor level supported by clamp & hangers etc. in concealed / inside duct / under floor & basement ceiling / external work etc. including chase cutting as required, excavation and back filling in all kind of soils, suspended from floor under false ceiling or embedding the pipes laid under floors / building in 75 mm. alround 1:2:4 cement concrete (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including cost of shuttering for proper completion of the work, breaking and making good the walls and floors etc. after pipes have been duly laid and tested. The rubber ring shall confirm to IS:5382.

	The Pipes will be supported with threaded G I rods & U clamps with nuts, washers etc on 50x50x5 mm slotted angle. The cost will include all support arrangements. The work includes commissioning of all pipes lines as per drawings and specifications and as directed by engg-in-charge at site.
3.1.1	110 mm dia (Wall Thickness - 3.2 to 3.8 mm)
3.1.2	90 mm dia (Wall Thickness - 3.2 to 3.8 mm)
3.1.3	75 mm dia (Wall Thickness - 3.2 to 3.8 mm)
3.2	Providing, fixing, jointing and testing in position ISI marked (IS:4985) UPVC pipes of min 6 Kg/ Sqcm rating with fitting for waste pipe from fixtures to floor trap including reduces, enlarger, socket, couplers, bends, tees etc including fixing at wall/ ceiling level supported by clamp & hangers etc. cutting holes in wall/ floors/ slabs and making good the same with cement concrete 1:2:4 complete as required.
3.2.1	32 mm dia.
3.2.2	40 mm dia.
3.2.3	50 mm dia.
3.2.4	65 mm dia.
3.3	Providing & fixing UPVC Floor trap of self cleansing design with stainless steel grating complete in all respects.
3.3.1	Multi Floor Trap (5" Ht) with height raiser and branch saddle strip of 50/75 mm outlet
3.3.2	Plain Floor Trap (4" Ht) with 50 / 75 outlet and with height raiser
3.3.3	P-Trap type Floor Trap 110 x 75 mm
3.4	Extra for providing & fixing 125 mm dia C.P. grating in place of SS grating over floor traps.
3.5	Providing & fixing of SS Floor Cleanout , round or square with rubber seal and flat round cover with screws and other required fitting complete as required.
3.6	Providing, fixing, jointing and testing in position of ISI marked UV stabilized UPVC pipes for rain water disposal, Type-B as per IS : 13592 suitable for rubber ring joints, including all neccessary specials and fittings (confirming to IS:14735) i.e. bends, tees, junctions (with or without doors), reducers, couplers, expansion joints / bellows, cowels, clamps, rubber rings, MS gratings over pipes of bell mouth construction with epoxy painting etc. fixing at wall/ ceiling/ floor level supported by clamp & hangers etc. in concealed / inside duct / under floor / external work etc. including chase cutting as required, excavation and back filling in all kind of soils, suspended from floor under false ceiling or embedding the pipes laid under floors / building in 75 mm. alround 1:2:4 cement concrete (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including cost of shuttering for proper completion of the work, breaking and making good the walls and floors etc. after pipes have been duly laid and tested. The rubber ring shall confirm to IS:5382.
	The Pipes will be supported with threaded G I rods & clamps on 50x50x5 mm slotted angle. The cost will include all support arrangements. The work includes commissioning of all pipes lines as per drawings and specifications and as directed by engg-in-charge at site.
3.6.1	110 mm dia (Wall Thickness - 3.2 to 3.8 mm)
3.6.2	90 mm dia (Wall Thickness - 3.2 to 3.8 mm)
3.7	Providing & fixing of medium class G.I.spout up to 300 mm. length including cutting and making good the walls and floors etc. as required.
3.7.1	a) 25 mm dia

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION

SCOPE OF WORK

INTERNAL ELECTRICAL WORKS FOR CLUB

SCHEDULE D3D

Sl. No.	DESCRIPTION
A	INTERNAL WIRING
	Point wiring in PVC conduit, with modular type switch :-
1	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed heavy class PVC conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.
1.1	Group B
2	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.
2.1	Group B
	Twin Control Point wiring in PVC conduit, with modular type switch :-
3	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed heavy class PVC conduit, 2 way modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.
	Power plug wiring in PVC conduit (2 x 4 Sq.mm.) :-
4	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed heavy class pvc conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.
	Circuit / Sub main wiring in PVC conduit :-
5	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed heavy class PVC conduit as required.
5.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire.
5.2	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire.
5.3	2 X 4 sq. mm + 1 X 4 sq. mm earth wire.
5.4	2 X 6 sq. mm + 1 X 6 sq. mm earth wire.
5.5	2 X 10 sq. mm + 1 X 6 sq. mm earth wire
5.6	2 X 16 sq. mm + 1 X 6 sq. mm earth wire
5.7	4 X 6 sq. mm + 2 X 6 sq. mm earth wire
5.8	4 x 10 sq.mm. + 2 x 6 sq.mm. earth wire
5.9	4 X 16 sq. mm + 2 X 6 sq. mm earth wire
6	Wiring including termination for the first light points controlled by MCB in distribution board (Cost of MCB taken separately) with 2x2.5 sq.mm. PVC insulated copper conductor FRLS wires of 1100 Volts grade in concealed/exposed PVC conduits and 2.5 sqmm. earth wire.
7	Same as above but LOOP POINT i.e. wiring of point looped from first point with 2x2.5 sq.mm. PVC insulated copper conductor FRLS wire of 1100 volt grade in concealed/exposed PVC conduits and 2.5 sqmm earth wire
	S/F light plug point modular type accessories :-
8	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.
	S/F power plug point modular type accessories :-
9	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.
10	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess i/c providing and fixing 25 amp modular socket outlet and 25 surface or in recess i/c providing and fixing 25 amp modular socket outlet and 25 Amps modular SP MCB, "C" curve including connection, painting etc. as required.

11	Supplying and fixing 20 A, 240 V, SPN Industrial type socket outlet, with 2 pole and earth, metal enclosed plug top along with 20 A "C" curve, SP, MCB, in sheet steel enclosure, on surface or in recess, with chained metal cover for the socket outlet and complete with connections, testing and commissioning etc. as required.
	S/F modular type electronic fan regulator :-
12	Supply and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.
	S/F modular type blanking plate :-
13	Supply and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.
B	DISTRIBUTION BOARDS & MCB's : All DBs shall be Fire Resistant.
14	Supplying and fixing 5 amps. to 32 amps. rating, 240 volts 'C' series, miniature circuit breaker (MCB) suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.
14.1	Single pole
14.2	Single pole and neutral
14.3	Double pole
14.4	Triple pole
14.5	Triple pole and neutral
15	Supplying & fixing single pole, blanking plate in the existing MCB DB complete etc. as required.
16	Supplying and fixing following rating, double pole , 240 volts, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.
16.1	40 amps.
16.2	63 amps.
17	Supplying and fixing following rating, four pole , 415 volts, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.
17.1	40 amps.
17.2	63 amps.
17.3	100 amps.
18	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.
18.1	25 amps.
18.2	40 amps.
18.3	63 amps.
19	Supplying and fixing following rating, four pole , (three phase & neutral) 415 volts, residual current circuit breaker (RCCB), having a sensitivity current upto 300 milliamperes in the existing MCB DB complete with connections, testing and commissioning etc. as required :
19.1	25 amps.
19.2	40 amps.
19.3	63 amps.
20	Supplying and fixing following way, Fire resistant, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)
20.1	6 way , Double door
20.2	8 way , Double door
20.3	12 way , Double door
20.4	16 way, Double door
21	Supplying and fixing following way, Fire resistant, horizontal type TP&N, sheet steel MCB distribution board , 415 V on surface /recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required (But without MCB / RCCB / Isolators).
21.1	4 way (4 + 12), Double door
21.2	6 way (4 + 18), Double door

21.3	8 way (4 + 24), Double door
21.4	12 way (4 + 36), Double door
22	Supplying and fixing of following ways surface/ recess mounting, Fire resistant, vertical type, 415 V, TPN MCB distribution board of sheet steel, dust protected, duly powder painted, inclusive of 200 A tinned copper bus bar, common neutral link, earth bar, din bar for mounting MCBs (but without MCBs and incomer) as required (Note : Vertical type MCB TPDB is normally used where 3 phase outlets are required.)
22.1	4 way with 100 Amps MCCB as incomer
22.2	8 way with 100 Amps MCCB as incomer
22.3	12 way with 100 Amps MCCB as incomer
C	CONDUITING AND CABLING:
	S/F MODULAR BOXES, BASE & COVER PLATE :-
23	Supplying and fixing following size / modules, GI box along with modular base & cover plate for modular switches in recess etc as required
23.1	75 mm x 75 mm (1 Module or 2 Module)
23.2	100 mm x 75 mm (3 Module)
23.3	125 mm x 75 mm (4 Module)
23.4	200 mm x 75 mm (6 Module)
23.5	125 mm x 125 mm (8 Module)
23.6	200 mm x 150 mm (12 Module)
24	Supplying and fixing following Modular Base & cover plate on existing modular metal box etc as required.
24.1	1 Module or 2 Module
24.2	3 Module
24.3	4 Module
24.4	6 Module
24.5	8 Module
24.6	12 Module
	S/F MODULAR TYPE SWITCH / SOCKET :-
25	Supplying and fixing following modular switch/ socket on modular base, cover plate & switch box including connections etc. as required.
25.1	5/6 A Switch
25.2	2-Way 5/6 A Switch
25.3	15/16/25 A Switch
25.4	3 pin 5/6 A Socket outlet
25.5	6 pin 15/16 A Socket outlet
25.6	Telephone socket outlet (RJ-11)
25.7	TV antenna socket outlet
25.8	Bell Push
26	Supply and fixing of following sizes of heavy class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required :
26.1	20 mm.
26.2	25 mm.
26.3	32 mm.
27	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.
27.1	25 mm.
27.2	32 mm.
28	Supply and drawing following pair, 0.5 sq.mm. FRLS PVC insulated annealed copper conductor, unarmoured telephone cable in the existing surface / recessed steel/ PVC conduit as required.
28.1	2 Pair
28.2	4 Pair

29	Supplying and fixing 3 pin, 5A Ceiling rose on the existing junction box/ wooden block including connections etc. as required.
30	Supplying and fixing Call bell/ Buzzer suitable for Single phase, 230V complete. as required.
31	Supplying and drawing of UTP 4 pair Cat-6 LAN cable in the existing surface/ recessed Steel/PVC conduit as required.
31.1	1 Run of Cable
32	Supplying and fixing suitable size GI Box with modular plate and cover plate on surface or in recess, including providing and fixing 2Nos. 3 pin 5/6 A modular socket outlet and 2Nos. 5/6 A Switch connections etc. as required.
33	Providing 20 amp control switch and 6 pin 20 amp socket at different locations including connecting conduit and circuit by 2x4 + 2.5 sq mm copper wires. (For Geyser)
34	Providing & Fixing of modular plate type white RJ 45 CAT 6 Data outlet / information outlets on 1.0 mm tk G.I. Switch control boxes, with cover plate, grid plate, screws, etc with connections as required.
34.1	1 nos. RJ 45 Data Outlet
34.2	2 nos. RJ 45 Data Outlet
TELEPHONE & TELEVISION SYSTEM	
35	Supply, installation, testing and commissioning of enhanced category 5 patch panels suitable to meet or exceed TIA and ISO component performance requirement, universal wiring may be terminated to T568A or T568B standards with lables and suitable for mounting on to 19" communication rack. The complete formation shall be suitable for 480 nodes.
35.1	24 ports
36	Supply, installation, testing and commissioning of enhanced category 5 patch cords exceeding Category 5e performance standards, 4 pair stranded UTP, 24 AWG conductors, non plenum, size 7 ft. and 10 ft.
37	Supply, installation, testing and commissioning of enhanced category 5e mounting cords 7ft. both side factory fitted RJ 45 connector.
38	Supply, installation, testing and commissioning of 37 U / 42 U floor standing 19 " communication Rack 800 x 800 mm with front glass door with lock and key arrangement, rear MS door, passive and active mountable space with 650 mm active switch installable space, horizontal power manager, cable manager, twin fan, cantilever tray and castor wheel fixed. [Make : Rittal / President]
39	Supply and fixing of Pre-Galvanized sheet steel under floor raceway / cable management system of rectangular shape with openable top for power, voice and data cables complete in all respects with suitable size junction boxes having margin for tile or carpet, corner pieces, caps, end covers, cross overs, access outlets, counter sunk screws etc. The system is intended for laying on structural slab/floor prior to the screed being poured. The minimum screed cover over channel should be 25 mm. (Make : MK / Skaber)
	Single Compartment Type
39.1	50 x 40 mm size (16 SWG) - single compartment
39.2	75 x 40 mm size (16 SWG) - single compartment
39.3	100 x 40 mm size (16 SWG) - single compartment
40	Providing, fixing, connecting & testing of Krone box (Telephone Tag Block) in a thermoplastic, IP 65 (weather proof) enclosure, internally embedded gasket, anti corrosive, insulated and shock proof with provision for cable through IP 65 glands complete in all respects. (Make : Hensel)
40.1	10 pair krone (Hensel - KG 9001 - size 136*253*115 mm)
40.2	20 pair krone (Hensel - KG 9001 - size 136*253*115 mm)
40.3	50 pair krone (Hensel - KG 9003 - size 217*253*115 mm)
40.4	100 pair krone (Hensel - KG 9003 - size 217*253*115 mm)
41	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.
42	Providing & Fixing of G. I. TV / Tel junction Box suitable for modular plate type switches (Approx size : 200 x 75 x 50 mm) complete in all respect with cover plate, grid plate, screws, blank plates etc as required.
43	Supply, Installation, Testing & Commissioning of on line UPS as per following details :- Technology : Micro processor based controls, True on line, Double conversion type, should have cold start facility. Input :- (mains / local D G set compatibility)

	a) Voltage : 230 V / 1 Phase
	b) Voltage Variation : - 20% to + 20%
	c) Input Frequency : 50 Hz.
	d) Frequency Variation : + 10%
	Output :-
	a) Voltage : 230 V / 1 Phase
	b) Voltage Variation : + 1%
	c) Frequency Variation : 50 Hz. + 0.1%
	Overall Efficiency : > 90%
	Charger : Should have built in charger to suit system requirement.
	Battery type : Sealed Maintenance Free - SMF
	Back-up time : 20 Min. with SMF batteries
	Rating : 2 KVA
44	Fiber Direct to Home
	Equipments
44.1	Supplying & fixing ONT box(400X300mm) of steel sheet on surface/ recess complete with powder painted including earthing etc. as required.
44.2	Supply and fixing of following sizes of ISI marked PVC heavy duty conduit alongwith the accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.
i.	25 mm dia 2 Nos from ONT box to LV shaft with steel fish wire
D	MISCELLANEOUS
45	Providing and fixing circular/ Hexagonal cast iron or M.S. sheet box for ceiling fan clamp, of internal dia 140 mm, 73 mm height, top lid of 1.5 mm thick M.S. sheet with its top surface hacked for proper bonding, top lid shall be screwed into the cast iron/ M.S. sheet box by means of 3.3 mm dia round headed screws, one lock at the corners. Clamp shall be made of 12 mm dia M.S. bar bent to shape as per standard drawing.
E	INTERNAL LIGHTING FIXTURES & FANS (COMMON AREA)
	SUPPLY OF LIGHTING FIXTURES
46	Supply of surface, wall / ceiling mounting LED T5 / T8 Tube Light fixture having Powder coated die cast aluminium housing with heat sink, PF above 0.9, efficacy above 90 lm/watt, pre wired with constant current LED driver set, suitable for 1 phase, 240 V, 50 Hz, IP 20 complete in all respects. (colour temperature 3000oK / 4000oK / 6500oK - to be confirmed before supply)
46.1	9 watt LED T5 / T8 Tube Light fixture (600 mm long)
46.2	18 watt LED T5 / T8 Tube Light fixture (1200 mm long)
47	Supply of recess / surface, round / square, ceiling mounting LED Light fixture having Powder coated die cast aluminium housing with heat sink, glare free diffuser with uniform light distribution, PF above 0.9, efficacy above 90 lm/watt, pre wired with constant current LED driver set, suitable for 1 phase, 240 V, 50 Hz, IP 20 complete in all respects. (colour temperature 3000oK / 4000oK / 6500oK - to be confirmed before supply)
47.1	9 watt LED DOWN LIGHT
47.2	18 watt LED DOWN LIGHT
47.3	10 W WALL BRACKET LIGHT
47.4	Profile light
48	Supply of surface mounted bulk head fixtures with LED lamp complete as per standard item with copper wiring lamps as required as per the standard catalogue item.
48.1	9 watt LED Bulk Head
48.2	Supply of LED COB ceiling light fixtures
49	Supply of surface mounted Façade Light fixtures with LED lamp complete as per standard item with copper wiring lamps as required as per the standard catalogue item.
49.1	Surface wall mounted 100 w LED uplighter fixture 3000K IP67 grade-4 nos
49.2	Surface wall mounted 100 w LED uplighter fixture 5700K IP67 grade -4 nos

49.3	Surface wall mounted 10 w/mtr LED profile light 3000K IP67 grade at terrace around
50	Supply of Aviation obstruction light with LED lamp, toughened clear glass, with all accessories as per standard item.
LIGHT FIXTURES & FAN	
	All the lighting fixtures and fans samples must be gotten approved from the Owner/ Architect/ PMC before ordering on the Sub-vendor and before supply.
	All the ceiling fans shall be complete with down rods of required length. The colour and shade of fans shall be gotten approved by the Owner / Architect / PMC.
	All Exhaust fans shall be complete with frames, colour and shade shall be gotten approved from Owner / Architect / PMC.
	All the fixtures / fans shall be of good quality and technically safe as per approved standard and codes.
	All Light fittings/fixture,Fan& exhaust fans are to be provided by the contractor.
	All pool deck and under water lighting shall be provided by the Contractor.
SUPPLY OF CEILING & EXHAUST FANS	
51	Supply of AC 230/250 volts, 50 HZ energy efficient ceiling fan with standard down rod, blades, 2 nos. caps etc. complete
51.1	1400 mm sweep (BEE 5Star)
51.2	1200 mm sweep (BEE 5Star)
52	Supply of AC 230/250 volts, 50 HZ exhaust fans including providing nuts, bolts, mounting frame and other accessories etc. complete
52.1	300 mm sweep 900 rpm (BEE 5Star)
53	Supply of 400 mm sweep AC 230/250 volts, 50 HZ wall mounting revolving fan with brackets etc. complete
ERECTION OF LIGHTING FIXTURES AND FANS	
54	Installation, testing and commissioning of pre-wired, flourescent fitting / compact flourescent/light fitting of all types , complete with all accessories and tubes etc. directly on ceiling / wall, including connection with 1.5 sq. mm. FRLS PVC insulated, copper conductor, single core cable and earthing etc. as required.
54.1	Recess / surface, round / square, ceiling mounting LED Light fixture
54.2	Surface, wall / ceiling mounting LED T5 / T8 Tube Light fixture
54.3	Surface mounted bulk head fixtures with LED lamp
54.4	Recess mounted LED COB ceiling light fixtures
54.5	Profile light suitable for 25x25mm grooved false ceiling in Club reception
55	Supply, Installation, testing & comisioning 10 W LED (RUGBYGENXFTS10WLED865SSYMBOPC) Bulkhead light similar to Havells or equivalant as approved in Lift Wells and shafts.
56	Aviation obstruction light with all accessories, fitted on 32 mm dia class B, G I Pipe fixed on the roof as required and as per site conditions.
57	Installation, testing and commissioning of ceiling fan including wiring the down rod of standard length (upto 30 cm.) with 1.5 sq. mm. FRLS PVC insulated, copper conductor, single core cable, including providing and fixing phenolic laminated sheet cover on the fan box etc. as required.
58	Installation of exhaust fan in the existing opening, including making good the damage, connection, testing, commissioning etc. as required
58.1	Upto 450 mm sweep
59	Installation, testing and commissioning of surface mounted Façade Light fixtures with LED lamp complete as per standard item with copper wiring lamps as required as per the standard catalogue item.
59.1	Surface wall mounted 100 w LED uplighter fixture 3000K IP67 grade-4 nos
59.2	Surface wall mounted 100 w LED uplighter fixture 5700K IP67 grade -4 nos
59.3	Surface wall mounted 10 w/mtr LED profile light 3000K IP67 grade at terrace around

G	FIRE DETECTION AND ALARM SYSTEM
	INTERNAL FIRE DETECTION AND ALARM SYSTEM
1	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.
1.1	25 mm conduit MS
2.0	Supplying, installation, testing & commissioning of main control and indicating panel made out of 16 SWG MS sheet to accommodate the following items duly powder coated in approved colour with louvers for ventilation, locking arrangement, audio and visual indication for fire alarm and public address system, monitoring system including connections, interconnections etc complete as required. 10 Zone panel for fire alarm system 250 Watt amplifier racks suitable for operation on 230V AC/24V DC supply conforming to IEC-268-3 complete with all accessories as required - 2 Nos.(one to act as standby) Talk back master station with LED PTT (press to talk) push button for operation on 230V AC/24 V DC supply conforming to IEC-268 for simplex mode of operation/communication suitable for 20 Nos.talk back unit -1 set. Announcement control desk suitable for selection of different zones selectively and ON ALL CALL switch with visual indication etc. complete as required -1 set. Amplifier change over switch for inter changing amplifier -1 No. Monitor panel for loudspeaker complete with output selector, ON/OFF switch, fuse, visual indications etc. complete as required- 1 No. Gooseneck microphone with stand and ON/OFF switch- 1 No. Main ON/OFF switch, fuse indication lamps, DC and AC voltmeters & ammeters, terminal blocks etc. complete as required -1 set. Battery charger trickle cum boost to take complete load of fire alarm & PA system complete with all accessories including providing & fixing of 2 nos.12 volt, 60 AH each sealed maintenance free batteries -1 set.
3.0	Supplying, installation, testing & commissioning of heat detector operating at 54°C/57°C with rate of rise cum fixed temperature (dual thermistor) type with mounting base complete with all connection etc. as required.
4.0	Supplying, installation, testing & commissioning of smoke detector with builtin LED and mounting base complete with all connections etc. as required.
5.0	Supplying, installation, testing & commissioning of manual call boxes of MS construction in surface/recess with stainless steel chain & hammer assembly complete with glass and push button etc. as required.
6.0	Supplying, installation, testing & commissioning response indicator on surface/recess MS box having two LEDs metallic cover complete with all connections etc. as required.
7.0	Supplying, installation, testing & commissioning fire alarm sounder with facility to make announcement, mounted in M.S.box (16 SWG) with hinged cover plate & suitable for operation with amplifier i/c line matching transformer etc. complete as required.
8.0	Supplying, installation, testing & commissioning of fire fighter phone jack complete as required.
9.0	Supplying, installation, testing & commissioning of fire fighter telephone handset complete as required.
10.0	Providing and fixing of self illuminated / auto glow "EXIT" signs printed on photoluminescent sheet containing self illuminated base chemical, of appropriate size not less than 400 x 150 mm, suspended from ceiling or fixed to the walls with accessories as required and as directed at site etc. complete as required.
11.00	Supplying and fixing of following sizes of heavy class PVC conduit along with accessories in surface /recess including cutting the wall and making good the same in case of recessed conduit as required.
11.1	25 mm dia.
12.00	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.
12.10	1 run of cable

13.00	Supply and drawing Two pair 0.5 Sq. mm copper twisted cable for talk back system .
14.0	Supplying & laying of 2x1.5 sqmm fire survival armoured cable , 600/1000V rated with annealed copper conductor having glass mica fire barrier tape covered by an extruded layer of Cross Linkable Ethylene Propylene Rubber (EPR) insulation and LSZH inner bedding, steel wire armouring & LSZH outer sheath complete as required.
14.1	2C x 1.5 sq. mm Armoured
15.0	Supply and laying of ISI marked Copper conductor PVC insulated FRLS control cable as per IS 1554 or XPLE insulated as per IS 7098 PVC sheathed 1100 volts grade. On surface the cable run shall be fixed by GI clamps etc. of suitable size or on existing cable tray complete in all respect. The armouring of the cable shall be properly connected with the earth conductor including fixing of palm or pin type copper tin plated cable socket (lug) to the cable leads, glands, connectors, junction box, insulating with tape and making connections complete in all respect including supply of clamps, lugs, glands, JB, tape etc complete upto the satisfaction of Engineer-in-charge.
15.1	4 x 1.5 sq mm armoured
16.0	Supplying and installing all sizes of perforated painted with powder coating M.S. cable trays Tee with perforation not more than 17.5%, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.
17.0	Supplying, installation, testing & commissioning of repeater panel with 320 character/ Touch screen LCD display with inbuilt reset, acknowledge and silence switches complete as required. (Near control room/guard room -entrance gate)
H	DVR BASED CCTV SURVEILLANCE SYSTEMS
1	2 Megapixel IP IR Dome Camera :- Supply, installation, testing and commissioning of UL Listed 2 Megapixel, 1/3" progressive CMOS Vandal-proof, Network Dome Camera, Day & Night IR cut filter with auto switch, Digital WDR, 3D DNR, Video Compression H.264/MJPEG, Minimum Resolution 1920 x 1080:25fps, Built-in Micro SD/SDHC/SDXC card slot, up to 64 GB, Line Crossing, Intrusion Detection, Motion detection, Dynamic analysis, One-key reset, Flash-prevention, dual stream, heartbeat, mirror, Standard ONVIF, PSIA, CGI, ISAPI, Operating Conditions, -30 °C – 60 °C (-22 °F – 140 °F), PoE (802.3af), IR Range 30 meters, Ingress Protection, Backlight compensation, 0.01Lux @ (F1.2, AGC ON), 0 Lux with IR, 0.028 Lux @ (F2.0, AGC ON), 0 Lux with IR, 4mm @ F2.0 lens (2.8mm, 6mm optional), including RJ45 connector for connection etc. required for commissioning.
2	2 Megapixel IP IR Box/Bullet Camera :- Supply, installation, testing and commissioning of UL Listed 2 Megapixel, 1/3" progressive CMOS Vandal-proof, Network Box/Bullet Camera, Day & Night IR cut filter with auto switch, Digital WDR, 3D DNR, Video Compression H.264/MJPEG, Minimum Resolution 1920 x 1080:25fps, Built-in Micro SD/SDHC/SDXC card slot, up to 64 GB, Line Crossing, Intrusion Detection, Motion detection, Dynamic analysis, One-key reset, Flash-prevention, dual stream, heartbeat, mirror, Standard ONVIF, PSIA, CGI, ISAPI, Operating Conditions, -30 °C – 60 °C (-22 °F – 140 °F), PoE (802.3af), IP66, Impact Protection IK08, IR Range 50 meters, Ingress Protection, Backlight compensation, 0.01Lux @ (F1.2, AGC ON), 0 Lux with IR, 0.028 Lux @ (F2.0, AGC ON), 0 Lux with IR, 6mm @ F2.0 lens (4mm optional), including Bracket, including RJ45 connector for connection etc. required for commissioning.
3	Supply, installation, Testing and Commissioning of UL listed NVR . This shall support minimum 5 clients and include the required hardware cost and the software cost for the same as per the system requirement. APP allows a quick remote access and control via mobile phone, having minimum 25 Mbps Incoming bandwidth & 80Mbps Outgoing bandwidth & recording resolution of video all channel suitable for 1080 realtime /nonrealtime Live view, H.264/MJPEG dual core decoding, Max 240fps@1080p, 480fps @720p, 960 fps @D1 preview & recording, Up to 5Mp resolution, Support minimum 4 SATA slot for hard disk, 2 USB 2.0, should have 2HDMI ports & 1 VGA port for simultaneous video output, Support Multi-brand Network camera, ONVIF Version 2.0 with input voltage of 240 V AC, suitable Hard disk required for 15 days recording (calculations to be submitted by vendor) complete as per specifications, DVR should be of same make as Cameras.
3.1	32 Channel

4	Supply,installation,testing and commissioning of 10/100/1000 Fast Ethernet L2 Managed stackable switches- All PoE managable network switch with 2x Gigabit ports or 2xSFP slots for Fiber modules with suitable POE budget for camera rating & upto 4 KV surge protection for camera & POE Port etc required for commissioning.
4.1	24 Port
5	Supply,installation,testing and commissioning of following port loaded jack panel for CAT6 Cable termination .
5.1	8 Port
5.2	24 Port
6	Supply,installation,testing and commissioning of following port loaded LIU with adaptor plates , pigtel cables for connections
6.1	4 Port
6.2	24 Port
7	Supply , Installtion , Testing and comissioning of CAT6 patch cord 3 feet for rack side switch termination.
8	Supply , Installtion , Testing and comissioning of SC-LC Single mode fiber patch cord
9	Supply, Installation, Testing & Commissioning of Fibre Modules 1000BASE-SX SFP connector.
10	Supply, installation, testing & commissioning of Layer-3, 24 Port Switch 10/100/1000 BaseT and 4 no 1G/10G SSP+ Ports with Internal RPS(Redundant Power Supply) with SFP Module Cost inclusive of LIU and LC couplers, plates, mounts etc. required for commissioning.
11	Supply,installation,testing and commissioning of 40" CCTV colour Led Monitor including all accessories complete as required.
12	Supply, installation, testing and commissioning of floor standing 19 " communication Rack with front glass door with lock and key arrangement, rear MS door, passive and active mountable space with active switch installable space, horizontal power manager, cable manager, twin fan, cantilever tray and castor wheel fixed complete as required.
12.1	32U
13	Supply, installation, testing and commissioning of wall mounted Rack with front glass door with lock and key arrangement, rear MS door, passive and active mountable space with active switch installable space, horizontal power manager, cable manager, twin fan, c complete as required.
13.1	9U
UPS SYSTEM	
14	Supply, Installation, Testing & Commissioning of on line UPS as per following details :- Technology : Micro processor based controls, True on line, Double conversion type, should have cold start facility. Input :- (mains / local D G set compatibility) a) Voltage : 230 V / 1 Phase b) Voltage Variation : - 20% to + 20% c) Input Frequency : 50 Hz. d) Frequency Variation : + 10% Output :- — a) Voltage : 230 V / 1 Phase b) Voltage Variation : + 1% c) Frequency Variation : 50 Hz. + 0.1% Overall Efficiency : > 90% Charger : Should have built in charger to suit system requirement. Battery type : Sealed Maintenance Free - SMF Back-up time : 20 Min. with SMF batteries Rating :3 KVA

	DISTRIBUTION BOARDS
15	Supplying and fixing following way, Fire resistant, single pole and neutral, sheet steel, MCB distribution board , 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)
15.1	8 way , Double door
16	Supplying and fixing 5 amps. to 32 amps. rating, 240 volts 'C' series, miniature circuit breaker (MCB) suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.
16.1	single pole
16.2	Double pole
17	Supplying & fixing single pole, blanking plate in the existing MCB DB complete etc. as required.
18	Supply of ISI marked Copper conductor PVC insulated FRLS Armoured Copper cable as per IS 1554 or XPLE insulated as per IS 7098 PVC sheathed 1100 volts grade . (Make : Universal (Satna) / CCI / Nicco / Finolex / Polycab / Skytone / RR)
18.1	3 x 2.5 sq mm
18.2	3 x 6 sq mm
19	Supply of 4 core, Single mode Armoured optical Fibre cable .
20	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required.
20.1	63 mm dia (OD-63 mm & ID-51 mm nominal)
21	Laying of Aluminium conductor XLPE insulated cable /Armoured Copper cable /CAT-6 Armoured Cable/ Fibre Cable on following ways including required accesories & hardware for propoer connection, complete in all respect. The armouring of the Power cable shall be properly connected with the earth conductor including fixing of palm or pin type copper tin plated cable socket (lug) to the cable leads, glands, connectors, junction box, insulating with tape and making connections complete in all respect including supply of clamps, lugs, glands, JB, tape etc complete upto the satisfaction of Engineer-in-charge.
21.1	On surface the cable run shall be fixed by GI clamps etc. of suitable size or on existing cable tray .
21.2	In the existing RCC/HUME/METAL Pipe complete.

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
INTERNAL FIRE FIGHTING FOR CLUB	
SCHEDULE D3E	
S. NO.	DESCRIPTION
S.No.	DESCRIPTION
A	FIRE HYDRANT SYSTEM
1.0	Providing, laying, jointing, testing and commissioning of following sizes of MS 'C' Class (Heavy duty) pipes conforming to IS-1239 with all accessories like orifice plate(of required dia), all fittings (standard MS fitting with welded joint shall be used on the pipes) including tees, elbows, reducers, union, flanges, rubber gaskets, GI nuts bolts, washer including supporting/fixing the pipe on floor / wall /ceiling with clamps, hangers (using anchor fastners) as per specification. G.I. pipe sleeve of suitable higher size shall be provided wherever the pipes are crossing the walls/floors and sealing the sleeves with glass wool in between & fire sealant compound at either end all as per Project Manager's / Consultants requirements including cutting holes and chases in brick, RCC work and making good the same to original conditions complete in all respects. All hangers, clamps, brackets etc. shall be of galvanized iron unless specified otherwire and then supply of the same shall also be included for rates under this head.
	Welding of any kind on the galvanized support / hanger shall not be permitted including synthetic enamel paint of approved shade over a coat of zinc primer.
	Note: Pipe upto 50 mm dia shall be threaded joints, above 50 mm shall be welded joints.
a.	25 mm dia
b.	32 mm dia
c.	40 mm dia
d.	50 mm dia
e.	65 mm dia
f.	80 mm dia
g.	100 mm dia
h.	150 mm dia
2.0	Providing two coats of synthetic enamel paint of approved shade over a coat of primer. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. Including painting of legends both direction arrow as per the approval of the Project Manager.
a.	25 mm dia
b.	32 mm dia
c.	40 mm dia
d.	50 mm dia
e.	65 mm dia
f.	80 mm dia
g.	100 mm dia
h.	150 mm dia


GARG & ASSOCIATES
 48, REGAL BUILDING
 CONNAUGHT PLACE
 NEW DELHI-110061
 GARG & GARG
 CA-NO.-93/25499



S. NO.	DESCRIPTION
3.0	Providing laying, testing & commissioning of ' C ' class heavy duty MS Pipe conforming to IS 1239/3589 i/c fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. in ground including welding, excavation & providing cement concrete blocks as supports, anticorrosive treatment with coaltar/asphalt tape as per IS 10221, refilling the trench etc. of following sizes complete as required.
	150 MM NB
4.0	Providing and fixing M.S. structural work fabricated from standard sections, (MS rounds, angles, channels etc.) including cutting to size, drilling, welding, including cost of fasteners, clamps in RCC structural members as directed, including two or more coats of synthetic paint over one coat of primer after surface preparation including cutting and making good walls.
5.0	Providing & fixing Stainless Steel fire hydrant single headed landing valve with 80 NB flanged inlet, brass spindle controlled 63 mm dia female instantaneous outlet type coupling, blank cap, chain, twist release type lug & all accessories. Conforming to IS standard. Including fixing with anchor fastener and flanged tapping from wet riser and providing pressure gauge with gun metal ball valve complete as required.
6.0	Providing and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :
6.1	Stainless Steel (Grade 304)
7.0	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :
7.1	Stainless Steel (Grade 304)
8.0	Providing & Fixing of standard Fireman's Axe with heavy insulated handle.
9.0	Providing & Fixing of wall mounting swinging type first aid fire hose reel with drum, hanging bracket, 36.5 Mtr. length x 20 mm dia high pressure hose reel tubing as per IS: 444 with gun metal (GM) shut off nozzle having 5 mm dia orifice. The hose reel shall be conforming to IS : 884-1985. Rate shall include 25 mm dia M.S. pipe connection from Riser to hose reel, sockets, nipples, elbows and ball valve (25 mm dia). Drum shall be fixed on adjoining wall through anchor fasteners / cement concrete block as and when required. (For internal hydrant system).
10.0	Providing & fixing fire authority approved powder coated Aluminum door frame and shutter (size as per drawings) frame capable of accommodating fire hose reel, fire hydrant, hose pipe, fittings & accessories. The box shall have a single or double glazed front glass door (with 5 mm thick glass) with lock & key arrangement & shall be Powder coated with Fire red as per IS:5, shade no. 536. (For Internal Hydrant)
11.0	Providing and fixing ball valve (brass) of approved quality complete. (High or low pressure with plastic floats).
	25 mm nominal bore
12.0	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :.
a.	65 MM NB
b.	80 MM NB
c.	100 MM NB
d.	150 MM NB

S. NO.	DESCRIPTION
13.0	Providing, installation, testing and commissioning of non-return valve of following sizes confirming to IS: 5312 complete with rubber gasket, GI bolts, nuts, washers etc.as required :
a.	65 mm dia
b.	150 mm dia
14.0	Providing & fixing 25 mm dia air release valve with forged brass body full way ball valve type isolating valve, flanges / union, suitable for sprinkler / wet riser / down comer system with all necessary connections complete in all respects.
15.0	Providing, fixing, testing & commissioning of 15mm dia quartzoid bulb type sprinklers of rating 68 degree centigrade with required accessories :
15.1	Pendent Sprinklers
15.2	Side Wall Sprinklers
	<u>Note: All valves shall be of minimum 16 Kg/sq.cm working pressure</u>
B.	PORTABLE FIRE EXTINGUISHERS
1.0	Supply & erection of ISI marked portable fire extinguishers , wall mounted type, wall brackets complete in all respect as per standard item with all accessories, delivery hose & nozzle wherever required, including fixing on walls as per the directions of Engineer-in-charge.
1.1	Water CO2 type. 9 Lt.capacity (IS:940)
1.2	CO2 gas type. 4.5 kg. Capacity (IS:2878)
2.0	Supply & fixing of 4 nos. G.I. round bottom fire buckets of 9.5 liters capacity filled with sand including proper supporting / mounting arrangements in MS angle iron frame, painted by fire red colour over two coats of red oxide paint and written with white paint "FIRE" complete in all respects as per the directions of Engineer-in-charge.
C	FIRE HOSE CABINET
1.00	Providing and fixing standard fire hose cabinet (1000 mm x 2000 mm x 450 mm) indoor type suitable for accomodating internal hydrant, hose reel made of not less than 16 SWG MS sheet having full fronted glass hinged door (5 mm thick clear glass) including necessary locking arrangement with handle for housing two nos. 15 meter long fire hose pipes, 30 meter long hose reel, branch pipe and hydrant valve as required as per drawings, including brackets for mounting accessories, painting (one coat primer and two coat of fire red colour). The cabinet shall be mounted on suitable raised platform. The words " FIRE HOSE " to be painted on the box.

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
HVAC & AUDIO SYSTEM FOR CLUB	
SCHEDULE D3F	
S. NO.	DESCRIPTION
	AIR CONDITIONING WORK
	VRF/VRV AC SYSTEM
	Makes:- Mitsubishi Electric/ Daikin / Bluestar
1.0	OUT DOOR UNITS:
	Supply, Installation, Testing & Commissioning of Modular type Variable Refrigerant Flow/Variable Refrigerant Volume air cooled Outdoor units suitable for cooling/heating having 100% hermetically sealed inverter type twin Rotary/Scroll Compressor(s), minimum two compressors (with individual separate PCB) for above 14HP modules, microprocessor based Controller, top discharge type condensing unit(s), with R-410-A Refrigerant or \ vibration Isolators with suitable foundation etc. complete as required. To have better efficiency condenser fan shall be capable to operate at different speed with respect to load. The unit shall deliver the rated capacity and in confirmation as per IS 18728:2024 and CPWD Specifications and work even at 50°C ambient temperature without tripping. The system shall be able to deliver 100% of the rated capacity upto 39 Degree Celcius. The unit shall be suitable to work on 400V +/- 10%, 3 Phase, 50Hz AC power supply and BMS compatible. The unit shall be filled with first charge of the refrigerant and ready for use as required. The condenser should be coated with a hydrophilic film to prevent water accumulation on the surface of the heat exchanger, enhance water dispersion, and reduce the risk of degradation, thereby improving overall performance and durability. The Indian Seasonal Energy Efficiency Ratio (ISEER) of the unit shall be as per Energy Conservation and Sustainable Building Code (ECSBC) 2024 as below and complete as per CPWD specification, connections, inter connections etc. as required. (For capacity 40 and 70 ISEER 7.6 for Super ECSBC Building)
1.1	26 HP(14+12) (For Shop Area)
1.2	16 HP (For Gym & Hall)
1.3	14 HP (For Main Entrance Lobby)
1.4	10.0 HP (For Entrance Lobby Block-02)
1.5	8.0 HP (For Entrance Lobby Block-01)

2.0	VRV/VRF INDOOR UNITS:
	Supply, Installation, Testing and Commissioning of following minimum capacity High wall type Indoor unit equipped with and comfort washable synthetic media pre-filter, fan section with low noise fan/dynamically balanced blower, multispeed motor, coil section with DX copper coil, electronic expansion valve, outer cabinet, cord less remote control, drain pan, necessary accessories etc., suitable for operation on 230 V \pm 10%, 50 Hz, single phase AC supply, complete as required. The Indoor units must shut down upon receiving a signal from the BMS System/Fire Signals. The system shall be capable to adjust air flow as per room requirement automatically. The cooling capacity of indoor unit will be at air inlet conditions of 27 Degree C DB and 19 Degree C WB temperature. (Make will be same as of Outdoor)
a)	2.0 TR Hi-Wall Type Unit
b)	1.28 TR Hi-Wall Type Unit
c)	1.0 TR Hi-Wall Type Unit
	Makes:- Balnce Air / I flow / Intec / Edgetec
3.0	Supply, installation, testing and commissioning of factory fabricated Double Skinned Air-handling unit Floor mounted type fabricated out of extruded aluminium section with 0.6 mm pre-plasticized / pre-coated Galvanised steel sheet outside & 0.6 mm plain Galvanised steel sheet inside with backward curved DIDW fan, fan section and fan motor TEFC type suitable for operation on 415 volts \pm 10%, 50 Hz \pm 5% AC supply, 6 Row cooling coil made of Aluminium finned Copper tube with coil section, in Ceiling mounted AHU, Combination frame of Pre-Filter (MERV 8) section with filters of non woven synthetic media of 10 micron particle size with an efficiency of 90%, Fine filter (MERV 13) section with filters of non woven synthetic media of 5 micron particle size with an efficiency of 95% in supply after fan, polished stainless steel drain pan made out of 22 G sheet duly insulated. (With AHU VRF PIPE Kits & Starter Panel).
	The AHU panels shall be insulated with 43mm thick & 48 Kg/m ³ density PU foam & shall have thermal break. Fan section will be acoustic lined with 25 mm thick amrasound insulation with cover GI Perforated Sheet. The motor & blower assembly shall be mounted on Aluminium extruded section only. These AHUs shall have air inlet / outlet connection made of 20 G GI sheet. The complete AHU shall conform to specification & face velocity across cooling coil shall be limited to 152 MPM maxm. Static pressure given below is for guideline & actual to be calculated.
	AHU DX coils shall be in tune with the requirement of VRV Outdoor Unit capacity and no divisions shall be made in cross sectional area of the coil. If multiple ins and outs of refrigerant pipe are required then coils shall be grouped into required rows keeping the cross sectional area of the coil constant. The capacity of Air-handlers shall be as follows:
3.1	AHU- 5000 CFM with 6 row deep cooling coil, SP 40 MMWG (For Gym & Hall)
3.2	AHU- 4000 CFM with 6 row deep cooling coil, SP 40 MMWG (For Main Entrance Lobby)

3.3	AHU- 3000 CFM with 6 row deep cooling coil, SP 40 MMWG (For Entrance Lobby Block-02)
3.4	AHU- 2500 CFM with 6 row deep cooling coil, SP 40 MMWG (For Entrance Lobby Block-02)
3.5	Comprehensive Annual maintenance contract for VRF System with BMS System including Energy monitoring & Central Remote Control for Suitable for 90.0HP for Five Years DLP
3.6	Supply, Installation, Testing and Commissioning of Master Remote Control panel including all necessary control wiring. Master Remote Control Panel shall be connected to all indoor/outdoor units. Master Remote Control Panel shall be one Touch Screen Type .
3.7	Installation, testing & commissioning of self Diagnostic Type Remote controllers . Corded Type
3.8	Supply, installation, testing and commissioning of refrigerant Copper Y-Joints and T-Joints .
3.9	Refrigerant R-410A to top up the system if required.
4.0	REFRIGERANT PIPING: Supply, Installation, testing and commissioning including vacuumization and Nitrogen testing of following nominal sizes of soft/hard drawn copper refrigerant piping for VRV/VRF system, complete with fittings, with suitable adjustable ring type hanger supports, jointing/brazing including accessories, insulated with XPLE Class-O tubular insulation/with Class-O closed cell elastometric nitrile rubber tubular sleeves sections of 19 mm thick insulation as given below for Suction and Liquid lines, all accessories as per specifications etc. as required : (Final Qty. As Per Shop Drg.)
a)	6.4 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm
b)	9.5 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm
c)	12.7 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm
d)	15.86 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm
e)	19 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm
f)	22.2 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm
f)	25.4 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm
g)	28.58 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm
h)	31.8 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm
i)	34.9 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm
j)	38.1 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm
j)	41.27 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm

5.0	DRAIN PIPING :
	Providing and fixing of PVC drain pipe of 6 Kg /cm ² pressure rating complete with 6mm thick closed cell nitrile rubber insulation, fittings, supports, valves as per specifications & drawings.
a)	25 mm dia
b)	32 mm dia
	AIR DISTRIBUTION WORK FOR AC SYSTEM
6.0	Supply, installation, balancing and commissioning of Factory Fabricated GSS sheet metal rectangular complete with neoprene rubber gaskets, elbows, splitter dampers, vanes, hangers, supports etc. as per approved drawings and specifications of following sheet thickness complete as required.
a)	Thickness 0.63 mm sheet (24 G)
b)	Thickness 0.80 mm sheet (22 G)
c)	Thickness 1.0 mm sheet (20 G)
7.0	Supply, installation, balancing and commissioning of Fabricated at Site GSS sheet metal rectangular complete with neoprene rubber gaskets, elbows, splitter dampers, vanes, hangers, supports etc. as per approved drawings and specifications of following sheet thickness complete as required.
a)	Thickness 0.63 mm sheet (24 G)
b)	Thickness 0.80 mm sheet (22 G)
c)	Thickness 1.0 mm sheet (20 G)
8.0	Supplying, fixing. testing commissioning of GI volume control Duct damper complete with neoprene rubber gaskets, nuts, bolts, screws linkages, flanges etc, in accordance with approved shop drawings and specifications complete as required.
9.0	Supplying, fixing testing commissioning of Supply air grills of powder coated aluminium with aluminium volume control dampers as per specifications.
10.0	Supplying, fixing testing commissioning of Powder coated aluminium Return air Grills with Louver but without volume control dampers Complete as Required
11.0	Supply and fixing of Acoustic lining of supply air duct and plenum with 25 mm thick resin bonded glass wool having density of 32 kg/m ³ , with 25 mm X 25 mm GI section of 1.25 mm thick, at 600 mm centre to centre covered with Reinforced Plastic tissue paper and 0.5 mm thick perforated aluminum sheet fixed to inside surface of ducts with cadmium plated nuts, bolts, stick pins, CPRX compound etc. complete as required and as per specifications.

12.0	Supplying and fixing of following thickness duly laminated aluminum foil of mat finish closed cell Nitrile rubber (class "O") insulation on existing duct after applying two coats of cold setting adhesive (CPR X compound). The joints shall sealed with 50 mm wide and 3 mm thick self adhesive nitrile rubber tape insulation complete as per specifications and as required.
a)	19 mm
13.0	Supplying, fixing testing commissioning of Fire Dampers in Supply air duct/main branch and return air path as and where required of required Sizes control wiring ,the damper shall be Motorized and spring return so as to close the damper in the event of power failure automatically and open the same in case oh power being restored.The spring return shall be inbuilt mechanism and not externally mounted.The event of fire singnal complete as required and as per Specification.
13.1	Fire Damper
13.2	Actuator
14.0	Supply and Installation of Insulation under the RCC roof with Suitable rubber based Adhesive and Dash Fasteners, Material must be 50mm thick FR Classs O closed cell Flex acetate Plain, Density of insulation Material shall range from $28 \pm 3 \text{ kg/m}^3$ and thermal conductivity of material shall not exceed $0.029 \text{ W/m}^\circ\text{K}$ at 40°C .Insulation material shall conforms to FR Class O as per BS 476 part 6.Insulation material shall also conform to resistant to ageing as per ASTM C 177. Materail shall also satisfied the Creteria for toxicity when subjected to IMO 2010 FTP Code Part 2 test for Toxicity.
15.0	Supplying, fixing testing commissioning of powder coated aluminium Fresh/Exhaust air louvers With Damper and Bird screen.
16.0	Supplying, fabricating, installing and testing of fire retardent double Canvas Flexible Connection for constructed of standard material as per the drawings/specifications.
	Makes:- Balnce Air / Glenstorm / Greenoz / Truestar
17.0	ELECTRICAL WORKS
	Makes:- Application , Krypton
	Design, fabrication, supply, installation, testing and commissioning of panels fabricated out of 2mm thick for structural members and 1.6mm thick for door and covers CRCA sheet in cubicle compartmentalize free standing floor mounted/ wall mounted powder coated with reinforcement wherever necessary. Cable gland plates shall be provided on top and bottom. Panels have 2 Nos. earthing terminals. Panels shall be suitable for 415V, 3-phase, 4-wire, 50Hz supply system lifting hooks shall also be provided in case of large panels. Degree of ingress protection shall be IP42.

17.1	ODU PANEL (TERRACE)
	Incomer (1 No.):
	350 A, TPN MCCB (35 KA) with adjustable O/L fix short circuit
	Metering:
	0-500 Volts, digital Voltmeter with S/S and shall be protected by 2 Amps MCBs.
	0-350 Amps digital Ammeter and 400/5A, 10VA, CL-1 CTs and selector switch.
	Phase indicating lamps and shall be protected by 2 Amps MCBs.
	Bus Bars:
	400 Amps TPN Aluminium busbars, colour coded with heat shrinkable insulation sleeves,
	OutGoings
	(3) Nos. 4 pole 100A RCBO
	(3) Nos. 4 pole 63A RCBO
	(2) Nos. 4 pole 40A MCB (Spare)
17.2	MCB FOR IDU'S AC
	Supplying and fixing 5A to 32A rating 230/415V "C" curve, miniature circuit breaker suitable for inductive load of following poles in the MCB DB complete with connections, testing and commissioning etc. as required.
a)	1ph 32 A rating, 230V
18.0	Supplying & laying of following 1100 volt grade XLPE insulated PVC sheathed Copper conductor armoured cables including , clamped includes anchor fastners wall with suitable clamps, saddles fixing bolts including connecting testing and commissioning etc as per specification complete as required.
a)	4C x 10 Sq.mm.
b)	4C x 16 Sq.mm.
c)	4C x 25 Sq.mm.
19.0	Supplying and installing following size of perforated painted with powder coating MS. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with MS, suspenders including bolts & nuts, painting suspenders etc as required.
a)	200 x 50 mm x 1.6mm thick
20.0	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.
a)	25 mm dia. ISI marked, steel conduit
	EARTHING SYSTEM
	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.

	MECHANICAL VENTILATION FANS
	Makes:- Balnce Air / Fan Air/ Rivo
21.0	INLINE FANS
	Supply, Installation, Testing and commissioning of Fresh/exhaust air fan suitable for Inline mounting comprising of forward curved centrifugal blower complete with induction motor, metal clad MCB, canvas connection all compete as required. Motor shall be suitable for single phase, 230 volts, 50Hz AC. supply as per specifications of following capacities: Noiselevel should not exceed 65dB(A)at 3 meter in room condition.
a	1000 cfm capacity with10 mm static pressure
b	750 cfm capacity with10 mm static pressure
c	500 cfm capacity with10 mm static pressure
22.0	AXIAL FLOW FAN
	<p>Supply, Installation, Shifting, Loading, Unloading, Testing & Commissioning of Ceiling/ Floor Mounted Axial flow type exhaust fans complete with MS/GSS long casing (Motor should be totally accomdated inside the casing),aluminium alloy blades with aerofoil design with adjustable pitch blade & angle, bird screen, Double fire retardant flexible connections on both side (Fire rated & water proof shall be made of Silicon coated glass fabric having 250 degree / 2 hour fire rating). The complete fan assembly along with motor should be CE Certified/EN Certified in accordance with BS EN120101-3:2015 by a notified laboratory. The complete fan shall be able to operate at min. 250 Deg C for 2 Hours temp rating. The Type test report is to be submitted by fan manufacturer & same clearly indicate the make of motor used during the testing and the same make/model of motor should be supplied by the fan manufacture at the site. Motor shall be Suitable with VFD(or as menitoned below) , Motor shall be of $415 \pm 10\%$ volts, 50 Hz with Class H insulation conforming to efficiency grade IE3 for Exhaust with outlet velocity of upto 16 m/s and high temperature resistance confirming to BSEN-12101-3; 2015. Sound level at 3mt distance from fan outlet shall not be more than 80 dBA at 50 Hz, at room conditions . Capacity shall be as follows & as per detailed technical specifications complete with spring type anti vibration isolators,fan mounting arrangement,total fan Efficiency should not be less than 65 %. Fans shall be AMCA certified for sound and air for selected pitch.</p> <p>All Equipment installation should be minimum as per NBC -2016(Part 8 Section 3 standard). Vendor to reconfirm the Fan Motor HP as per manufaturer recommendation.</p> <p>Cost of Supporting arrangement as per approved shop drawing/ best indsustrial practice should be included in the above cost of equipment installation.</p>
	Air Qty = 12000 Cfm (For Hall)
	Static Pressure = 25mm
	Fan Speed = Not Exceed 2800 Rpm
	Motor rating = 7.7 Kw
	Fan Dia = 900 \varnothing

	Flow Direction	=	Impeller To motor
	Air Qty	=	6500 Cfm (For Pool)
	Static Pressure	=	25mm
	Fan Speed	=	Not Exceed 2800 Rpm
	Motor rating	=	3.7 Kw
	Fan Dia	=	600 Ø
	Flow Direction	=	Impeller To motor
	Air Qty	=	5000 Cfm (For Gym)
	Static Pressure	=	25mm
	Fan Speed	=	Not Exceed 2800 Rpm
	Motor rating	=	3.7 Kw
	Fan Dia	=	600 Ø
	Flow Direction	=	Impeller To motor
	Air Qty	=	4000 Cfm (Main Entrance Lobby)
	Static Pressure	=	25mm
	Fan Speed	=	Not Exceed 2800 Rpm
	Motor rating	=	3.7 Kw
	Fan Dia	=	600 Ø
	Flow Direction	=	Impeller To motor
	Air Qty	=	3500 Cfm (Enrance Block-02)
	Static Pressure	=	25mm
	Fan Speed	=	Not Exceed 2800 Rpm
	Motor rating	=	3.7 Kw
	Fan Dia	=	600 Ø
	Flow Direction	=	Impeller To motor
	Air Qty	=	3000 Cfm (Enrance Block-01)
	Static Pressure	=	25mm
	Fan Speed	=	Not Exceed 2800 Rpm
	Motor rating	=	3.7 Kw
	Fan Dia	=	600 Ø
	Flow Direction	=	Impeller To motor

23	<p>Supply, Installation, Shifting, Loading, Unloading, Testing & Commissioning of Ceiling/ Floor Mounted Axial flow type supply air fans complete with MS/GSS long casing (Motor should be totally accomodated inside the casing),aluminium alloy blades with aerofoil design with adjustable pitch blade & angle, bird screen, double fire retardant flexible connectionson both side (Fire rated & water proof shall be made of Silicon coated glass fabric having 250 degree / 2 hour fire rating) . Motor shall be suitable with VFD(or as mentioned below) compatible , Motor shall be of $415 \pm 10\%$ volts, 50 Hz with Class F insulation conforming to efficiency grade IE3 for Supply and Supply with outlet velocity of upto16 m/s and high temperature resistance confirming to BSEN-12101-3; 2015. Sound level at 3mt distance from fan outlet shall not be more than 80 dBA at 50 Hz at room conditions .Capacity shall be as follows & as per detailed technical specification complete with spring type anti vibration isolators ,fan mounting arrangement,total fan Efficiency should not be less than 65 %. Fans shall be AMCA certified for sound and air for selected pitch.</p> <p>Vendor to reconfirm the Fan Motor HP as per manufaturer recommendation.</p> <p>Cost of Supporting arrangement as per approved shop drawing/ best indsustrial practice should be included in the above cost of equipment installation.</p> <p>All Equipment installation should be minimum as per NBC -2016 (Part 8 Section 3 standard).</p>
	Air Qty = 12000 Cfm (Fresh Hall)
	Static Pressure = 25mm
	Fan Speed = Not Exceed 2800 Rpm
	Motor rating = 7.5 Kw
	Fan Dia = 1200 \varnothing
	Flow Direction = Impeller To motor
24.0	AIRWASHER
	<p>Supplying, Installing, Testing and Commissioning of CELDEK FILL package type air cooling unit with minimum 90% saturation efficiency. Air cooling unit shall be complete with double skin casing 0.8mm Inner / outer pre-coated GI sheets, DIDW Backward curved fans with TEFC, sq. cage, induction motors 1440 RPM (IE-3) with IP-55 Protection. Suitable for operation on $415 \pm 10\%$ voltage, 50 Hz 3 phase AC supply, drive package including multi sheave pulleys and belts for fans and motors, 1.2mm thick tank & pad section in SS 304 Construction, vibration isolators, wire mesh pre-filters, 200 mm thick CELDEK FILL, Water Circulation Pump (1W+1S), internal PVC piping, valves and fittings, 4-bend PVC eliminator. The Unit shall be following capacities complete as required.</p>
	8000 cfm capacity with 50 mm static pressure for (kitchen)

25.0	DRY SCRUBBER
	Supply, Installation, Testing and Commissioning of Dry Type Ceiling/Floor mounted Scrubber comprising electrostatic section multi cell type with 16 G powder coated galvanised steel sheet housing of 16 G (1.4 mm) thick system, bottom drain and metallic mesh filter. The electronic air cleaner shall be the two- stage dual voltage plate type cells and efficiency of 90% as per ASHRAE test Standard for dry particulate. Ionizing- collecting cell of one-piece construction. Power supply shall be 100% solid state. on 200 to 240 VAC, 50HZ, 1Phase input with an LED light indicating the performance status as per specification etc complete as required. with SISW Backward Curved Exhaust air fan double skin with TEFC Induction Motoras Accessories etc. as per Specification.
	10000 cfm capacity with 80 mm static pressure for (kitchen)
	AIR DISTRIBUTION WORK FOR VENTILATION SYSTEM
	Makes:- Balnce Air / Glenstorm / Greenoz / Truestar
26.0	Supply, installation, balancing and commissioning of factory fabricated GSS sheet metal rectangular complete with neoprene rubber gaskets, elbows, splitter dampers, vanes, hangers, supports etc. as per approved drawings and specifications of following sheet thickness complete as required.
a)	Thickness 0.63 mm sheet (24 G)
b)	Thickness 0.80 mm sheet (22 G)
27.0	Supply, installation, balancing and commissioning of fabricated at site GSS sheet metal rectangular complete with neoprene rubber gaskets, elbows, splitter dampers, vanes, hangers, supports etc. as per approved drawings and specifications of following sheet thickness complete as required.
a)	Thickness 0.63 mm sheet (24 G)
b)	Thickness 0.80 mm sheet (22 G)
28.0	Supply, fabrication, installation and testing of factory fabricated 16 Gauge MS duct work welded construction for Kitchen Exhaust including necessary supporting arrangement in accordance with the approved shop drawings and as per the NBC 2016 specifications etc complete as required. (Final Qty. As Per Shop Drg.)
29.0	Supplying & fixing of powder coated extruded aluminium Supply Air Grills with aluminium volume control dampers as per specifications.
30.0	Supplying, fixing testing commissioning of powder coated aluminium Fresh/Exhaust air louvers With Damper and Bird screen.
31.0	Supplying, fabricating, installing and testing of fire retardent double Canvas Flexible Connection wide for constructed of standard material as per the drawings/specifications.
	Makes:- Paramount Polytrear / 3M / Hilti

	Fire Rated Paint : STARCOAT-CRC
32.0	Supplying, Installation, Testing & Commissioning for fire rated paint (Starcoat CRC) CBRI tested for 2 hours as per BS 476 part 6,7, 20 & 24 duct Vertical & Horizontal for Kitchen Extraction Duct, Car Parking Duct, duct crossing fire compartment, ventilation duct along with all the necessary accessories (Sealant- ENIFIX 32-17 & Class O Gasket) etc. Details shall be as per tender specifications.
	ELECTRICAL WORKS FOR VENTILATION SYSTEM
	Makes:- Application , Krypton
33.0	ELECTRICAL WORKS
	Design, fabrication, supply, installation, testing and commissioning of panels fabricated out of 2mm thick for structural members and 1.6mm thick for door and covers CRCA sheet in cubicle compartmentalize free standing floor mounted/ wall mounted powder coated with reinforcement wherever necessary. Cable gland plates shall be provided on top and bottom. Panels have 2 Nos. earthing terminals. Panels shall be suitable for 415V, 3-phase, 4-wire, 50Hz supply system lifting hooks shall also be provided in case of large panels. Degree of ingress protection shall be IP42.
33.1	Axial Fan, Inline Fan, Propeller Fan
	Incomer (1 No.):
	63A, TPN MCCB (10 KA) with adjustable O/L fix short circuit
	Metering:
	0-500 Volts, digital Voltmeter with S/S and shall be protected by 2 Amps MCBs.
	0-63 Amps digital Ammeter and 63/5A, 10VA, CL-1 CTs and selector switch.
	Phase indicating lamps and shall be protected by 2 Amps MCBs.
	Bus Bars:
	100Amps TPN Aluminium busbars, colour coded with heat shrinkable insulation sleeves,
	Outgoing:
	02 Nos.7.7 KW as per Axial Fan (In Case of fire Mode)
	05 Nos.3.7 KW as per Axial Fan (In Case of fire Mode)
	Toggle Switch 2No+230V Ac power socket
34.0	Supplying & laying of following 1100 volt grade XLPE insulated PVC sheathed Copper conductor armoured cables including , clamped includes anchor fastners wall with suitable clamps, saddles fixing bolts including connecting testing and commissioning etc as per specification complete as required.
a)	4C x 6 Sq.mm.
35.0	Supply and erection of hot dip G.I. cable tray perforation not more than 17.5% for specific dimensions along with tees, bends. The cable tray shall be hang from ceiling/ fixed to wall with necessary angle/flat iron / hanging rod, for ceiling suspensions, clamps, anchor fastner, nuts, bolts, washers, not mor than 1.5 mtr. apart complete as per specification to complete the job. The tray shall be as follows :-
a)	100 x 50 mm x 1.6mm thick

36.0	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.
a)	25 mm dia. ISI marked, steel conduit
37.0	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.
a)	25 mm dia. ISI marked, PVC conduit
38.0	WIRING IN EXISTING CONDUIT / PVC CASING CAPPING WITH COPPER CONDUCTOR
	Supplying and drawing following sizes of FRLS PVC insulated copper conductor, single core cable in the existing surface/ recessed steel/ PVC conduit as required.
a)	2x 1.5Sq mm
39.0	EARTHING SYSTEM
b)	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/recessed conduit/submain wiring/cable as required.
C)	Group "C" - AUDIO SYSTEM
	PA/VA System
1.0	SITC of public address and voice evacuation system frame with 8 speaker line outputs/zones that can be switched between two amplifiers(2 amps for 8 zones + 1 standby amp), European Standard EN 54-16, Each amplifier channel has the following DSP functions: different filter types (PEQ, HPF, LPF, shelving, CD-horn EQ, notch), compressor and delay that enables appropriate acoustic adjustment for any broadcast area, 16 standard and 2 voltage-controlled control inputs, 8 control outputs by open-collector-transistor and 8 by 5 A relays, Frequency response- 40 Hz - 20 kHz, Control input-16 (by contact) + 2 (by 24 VDC polarity change), Control output-Open collector: 8 + 3 (CPU OFF), Relay (125 VDC, 5 A): 8, Connection-RJ45: control inputs x 2, control outputs (open collector) x 2, DS link x 1, remote microphones x 2, LAN x 2, analog link x 2 or better. Approved Makes- Biamp/Bose/TOA
2.0	SITC of Digital power amplifier module 500W type with 1 channel of class-D digital power amplifier Power / current consumption- 1.3 W (standby mode), 16 W (idle), 100 W (EN 62368-1: 1/8 rated output), 590 W (rated output), Frequency response- 40 Hz - 20 kHz, Distortion-< 1 % (at 100 V line, A-weighted), S/N ratio-100 dB(A) (or more at 100 V, A-weighted), Inputs- DA control link (15-pin connector), Outputs-100 V/70 V/50 V selectable. Approved Makes- Biamp/Bose/TOA

3.0	SITC of Power Supply Manager 3U rack-mount unit equipped with a battery charger and a switching power supply, Power Consumption- 1460 W max in total (at rated output with charging), Power Output-Rated output: 1140 W , Peak output: 1280 W, Control Connector-RJ45 female connector for connecting the system and cascade connection or better. Approved Makes- Biamp/Bose/TOA
4.0	SITC of ceiling mount speaker Rated Input-6 W (100 V line), 3 W (70 V line), Rated Impedance-100 V line: 1.7 k Ω (6 W), 3.3 k Ω (3 W), 10 k Ω (1 W),70 V line: 1.7 k Ω (3 W), 3.3 k Ω (1.5 W), 10 k Ω (0.5 W) Sensitivity- 90 dB (1 W, 1 m) (500 Hz - 5 kHz, pink noise), Frequency Response- 65 Hz - 18 kHz (peak -20 dB), Approved Makes- Biamp/Bose/TOA
5.0	SITC of wall mount speaker made of ABS resin Frequency response-120 Hz - 15 kHz, Sensitivity (1 W, 1 m)-91 dB, Tappings- 100 V line : 1.7 k Ω (6 W), 3.3 k Ω (3 W), 10k Ω (1 W)70 V line: 1.7 k Ω (3 W), 3.3 k Ω (1.5 W), 10k Ω (0.5 W), Approved Makes- Biamp/Bose/TOA
6.0	SITC of required speaker cables 14AWG as per standards. Approved Makes- Extron/Kramer/ Falcon
7.0	SITC of Gooseneck Microphone for the Above System Approved Makes- Akg/Shure/ Televik
8.0	SITC of required Cables and Connectors for finishing the above Job Approved Makes- Neutrik/Switchcraft/Reputed
Gym Sound System	
1.0	SITC of Digital mixer for up to 8 inputs and 8 outputs Audio Output- Preamplifier output 1, 2: 0 dB(*1), 600 Ω , balanced, removable terminal block (3 pins), Module Slot- Analog input (slot 1 - 8): -10 dB(*1), 10 k Ω , unbalanced Digital input (slot 1 - 4): 24 bit/48 kHz, MIX output (slot 1 - 8): -14 dB(*1), 330 Ω (CH 1 prefader output), unbalanced, Digital output (slot 5 - 7): 24 bit/48 kHz, Power supply (slot 1 - 8): +24 V, -24 V, +6 V DC. Digital Audio Signal Reference--20 dBFS, Frequency Response-20 Hz - 20 kHz, +1, -3 dB, Total Harmonic Distortion -0.008 % (at 22 kHz LPF, 1 kHz, +10 dB(*1) output). Crosstalk- 64 dB or more (at 20 kHz). Control Input/Output-RS-232C(*2), D-sub connector (9 P, female) or better. Approved Makes- Biamp/Bose/TOA

2.0	SITS of Line Input Module with DSP having Frequency response 20 Hz - 20 kHz, Power source 24 V DC, Distortion < 0.008 % (at 1 kHz, 20 Hz - 20 kHz BPF, Input sensitivity: -10 dB), S/N ratio 70 dB(A) (at 20 Hz - 20 kHz BPF, Input short, Input sensitivity: -10 dB), Crosstalk 75 dB, nputs 2 channels, 2 RCA/ch mixed, 10 kOhm, unbalanced, RCA pin jack, Sampling frequency 48 kHz or better. Approved Makes- Biamp/Bose/TOA
3.0	SITC of Dual Line Output Expansion Module with DSP having Frequency response 20 Hz - 20 kHz, Distortion < 0.005 % (at 1 kHz, 20 Hz - 20 kHz BPF, 5 V output, 10 kOhm load), S/N ratio -73 dB(A) (at 20 Hz - 20 kHz BPF), Crosstalk- 87 dB. Approved Makes- Biamp/Bose/TOA
4.0	SITC of Multi-channel Digital Power Amplifier having Class D Amplification System, Power- 4 channels: 250 W x 4 (4 Ω), 170 W x 4 (8 Ω), Input- 4 circuits, +4 dB* (1.23 V) (input level control in maximum position), 10 k Ω , electronically-balanced, removable terminal block (3 pins), Frequency Response 20 Hz - 20 kHz (± 1 dB), Total Harmonic Distortion 0.1 % (1 kHz) 0.3 % (20 Hz - 20 kHz), Signal to Noise Ratio 100 dB (A weighted), Crosstalk 70 dB (A-weighted) or better. Approved Makes- Biamp/Bose/TOA
5.0	SITC of Wide-dispersion Speaker System having Power Handling Continuous pink noise: 60 W, Continuous program: 180 W. Rated Impedance 8 Ω , Sensitivity 92 dB (1 W, 1 m) at installation in 1/2 free sound field, 93 dB (1 W, 1 m) at installation in 1/2 free sound field (with horn adapter), Frequency Response 65 - 20,000 Hz, -10 dB at installation in 1/2 free sound field. Crossover Frequency 2.5 kHz, Directivity Angle Horizontal: 110°, Vertical: 100° Horizontal: 80°, Vertical: 80° (with horn adapter).
6.0	SITC of compact, indoor-use subwoofer system having Power Handling Continuous pink noise: 200 W Continuous program: 600 W. Impedance 8 Ω , Sensitivity 90 dB (1 W, 1 m), Frequency Response 40 - 1.2 kHz (-10 dB), or better
7.0	SITC of required speaker cables 14AWG as per standards. Approved Makes- Extron/Kramer/ Falcon
8.0	SITC of required Cables and Connectors for finishing the above Job Approved Makes- Neutrik/Switchcraft/Reputed

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
FOR FURNITURE AND OTHER EQUIPMENTS FOR CLUB	
SCHEDULE D3G	
SR. NO.	DESCRIPTION OF ITEM
1	FURNITURE
i	<p>Three Seater Sofa-Model No Berry/55001/3-Supplying And Placing Three Seater Exclusive Premium Leatherette Modernist Classic Design Lounge Seating Sofa Size Is 1905mm(L) X890mm(D)X 870mm(H) With Kiln-Dried Wood Framing Makes It Warp And Scratch Resistant,Comfortable Seat Depth & Height Designed Keeping Modern Indian Lifestyle In Mind,Wrapped In Buttery-Soft Premium Leatherette, The Panelled Back And Cushioned Armrests Encourage Lounging, Designed With Modernity & Elegance, Choose The Option That Suits Your Home.Combination Construction Structure Are Made In Moisture Content Shall Be Less Than (10-12)%. Thickness Of Plywood Used (Mm) Shall Be 12 Mm Grade Is 303 Indian Standard For Commercial (Common) And Moisture Proof Plywood (Tentative). Understructure Frame Shall Be Constructed From 18 Mm Thick Kiln-Dried German Beech Wood Framing Is Highly Durable. The Complete Structure Shall Be Covered By P.U.Foam Fixed With Adhesive Glue ,The Frame Shall Be Padded With High Resilience Polyurethane Foam Having 28 +/- 5 Density In Seat It Shall Be Stack Foam Of 50mm Thik,40mm Thick Back Foam Having 20 +/- 5 Density Foam</p> <p>used,There Shall Be Cushion Arm 40mm Thick Provided Padded With High Resilience Polyurethane Foam Having Density 20 +/- 5. The Complete Stack Foam Structure Shall Be Covered With Premium Leatherette In Black-Eerie Black-Coffee Brown,Brown-Burnt Umber Colour, It Complements The Modish Legs Are Made By Round Shape In Pvc Material.(Seat : 510 Mm(D) X 445mm(H) , Arms Height @ 620mm / Back Height @ 460mm)The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org" in each case.- QTY 2 Nos</p>
ii	<p>Two Seater Sofa-Model No Berry/55001/2- Supplying And Placing Two Seater Exclusive Premium Leatherette Modernist Classic Design Lounge Seating Sofa Size Is 1410mm(L) X890mm(D)X 870mm(H) With Kiln-Dried Wood Framing Makes It Warp And Scratch Resistant,Comfortable Seat Depth & Height Designed Keeping Modern Indian Lifestyle In Mind,Wrapped In Buttery-Soft Premium Leatherette, The Panelled Back And Cushioned Armrests Encourage Lounging, Designed With Modernity & Elegance, Choose The Option That Suits Your Home.Combination Construction Structure Are Made In Moisture Content Shall Be Less Than (10-12)%. Thickness Of Plywood Used (Mm) Shall Be 12 Mm Grade Is 303 Indian Standard For Commercial (Common) And Moisture Proof Plywood (Tentative). Understructure Frame Shall Be Constructed From 18 Mm Thick Kiln-Dried German Beech Wood Framing Is Highly Durable. The Complete Structure Shall Be Covered By P.U.Foam Fixed With Adhesive Glue ,The Frame Shall Be Padded With High Resilience Polyurethane Foam Having 28 +/- 5 Density In Seat It Shall Be Stack Foam Of 50mm Thik,40mm Thick Back Foam having 20 +/- 5 Density Foam</p> <p>used ,There Shall Be Cushion Arm 40mm Thick Provided Padded With High Resilience Polyurethane Foam Having Density 20 +/- 5. The Complete Stack Foam Structure Shall Be Covered With Premium Leatherette In Black-Eerie Black-Coffee Brown,Brown-Burnt Umber Colour, It Complements The Modish Legs Are Made By Round Shape In Pvc Material.(Seat : 510 Mm(D) X 445mm(H) , Arms Height @ 620mm / Back Height @ 460mm)The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org" in each case.- 2 Nos.</p>


GARG & ASSOCIATES
 48, REGAL BUILDING
 CONNAUGHT PLACE
 NEW DELHI-110001
 GARG-GARG
 CA-NO.-99/25498



SR. NO.	DESCRIPTION OF ITEM
iii	<p>Single Seater Sofa- Model No Berry/55001/1: Supplying and Placing Single Seater Exclusive Premium Leatherette Modernist Classic Design Lounge Seating Sofa Size Is 960mm(L) X 890mm(D) X 870mm(H) With Kiln-Dried Wood Framing Makes It Warp And Scratch Resistant, Comfortable Seat Depth & Height Designed Keeping Modern Indian Lifestyle In Mind, Wrapped In Buttery-Soft Premium Leatherette, The Panelled Back And Cushioned Armrests Encourage Lounging, Designed With Modernity & Elegance, Choose The Option That Suits Your Home. Combination Construction Structure Are Made In Moisture Content Shall Be Less Than (10-12)%. Thickness Of Plywood Used (Mm) Shall Be 12 Mm Grade Is 303 Indian Standard For Commercial (Common) And Moisture Proof Plywood (Tentative). Understructure Frame Shall Be Constructed From 18 Mm Thick Kiln-Dried German Beech Wood Framing Is Highly Durable. The Complete Structure Shall Be Covered By P.U. Foam Fixed With Adhesive Glue, The Frame Shall Be Padded With High Resilience Polyurethane Foam Having 28 +/- 5 Density In Seat It Shall be Stack Foam Of 50mm Thick, 40mm Thick Back Foam Having 20 +/- 5 Density Foam</p>
	<p>used, There Shall Be Cushion Arm 40mm Thick Provided Padded With High Resilience Polyurethane Foam Having Density 20 +/- 5. The Complete Stack Foam Structure Shall Be Covered With Premium Leatherette In Black-Eerie Black-Coffee Brown, Brown-Burnt Umber Colour, It Complements The Modish Legs Are Made By Round Shape In Pvc Material. (Seat : 510 Mm(D) X 445mm(H) , Arms Height @ 620mm / Back Height @ 460mm) The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA, & FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org in each case.-1 No</p>
iv	<p>Providing & Supply of CENTER TABLE having dimensions shall be: (W)1080mm X (D)550mm X (H)450mm model no Fox/CT. The Table collection offers an abundance of style and storage for the modern living space. The rounded silhouettes with metallic accent stand firmly on solid wood tapered legs making it truly contemporary. Featuring with Designed from 10mm thick clear glass, Spacious tabletop, Easy access storage and Strong Beech wood legs. The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA, & FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org in each case.-1 No</p>
v	<p>Providing & Supply of SIDE TABLE having dimensions shall be: (W)520mm X (D)400mm X (H)555mm, model no FOX/ST. The Side Table collection offers an abundance of style and storage for the modern living space. The rounded silhouettes with metallic accent stand firmly on solid wood tapered legs making it truly contemporary. Featuring with Designed from 10mm thick clear glass, Spacious tabletop, Easy access storage and Strong Beech wood legs. The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA, & FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org in each case.-3 Nos.</p>
vi	<p>Supplying And Placing In Position Of The Reception Table Dimension :- 2700w X 700d X 750ht As Per Layout (Model :MOD). The Top Shall Be Made In 30mm Thick Pre-Laminated Particle Board With 2mm Thick Pvc Edgebanding. Front Panel Shall Be Made In 18mm Thick As Per Shown Design With Glass At Above Supporting On Ss Pole. Understructure Shall Be Made In 18mm Thick With Equal Distance As Shown. 2 Mobile Pedestal (2 Drawers + 1 Filing Cabinet) Size Is 450 Mm(L) X 450 Mm(D) X 725 Mm(H) In Provided With Central Lock's For Security And Handle's Are Provided For Easy Of Opening & Pedestal's Move On Nylon Castors. The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA, & FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org in each case.-2 nos (The shape of table shall be approved by Architect)</p>

SR. NO.	DESCRIPTION OF ITEM
vii	Providing and Supplying Reception Chair , Medium Back 360° Degree Revolving Chair , The Chair Made of Full Mesh In Available On Request Colour (Model No Modern/ MB) . It Will Comes In Matte Finsih In Contemporary Style .Arms : Two Way Adjustable PU Padded Arms With Up & Down Position.Use Of Ply: 12 Mm Thick Hot Pressed Bwr Plywood (Is Grade - 303 For Seat).Seat: 40 ± 2 Mm Thick Polyurethane Foam With Density 32 (±3) Kg Per Cu Meter For Best Quality Cushioning In Seat ,Back : Frame Of Design Shall Be Curved Made Of Two Pieces Injection Moulded Frame Cover With Mesh .Backrest Support Mesh Design Based On Symmetrical Lumbar Support.Seat & Back made up of PVC Fiber inner & outer surface for better utlity. Mechanism : Synchro Multi Locking Mechanism.Gas Lift 100 Mm Telescopic Haudraulic.Base : 650mm Nylon Base With Smooth Castors .The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org" in each case.-2 Nos
viii	Supplying And Placing in Position Of Executive Table Structure Of L Shaped Desk. Primary Work Surface Over All Size Is 1800mm(L)X 1000mm(D)X 750mm(H) 45mm Thick Tabletop Made of Hp Laminate Post Form Work Surface With Warm Finish In Black Oak Postforming Edges Made Of Same Matte Finish. Side Pannel Is Made Of 45mm Thick. Provision Of Side Runner/A Size Is 1825mm(L)X 500mm(D)X 605mm(H) ,(Combination Construction Below Table Top Side Runner/A Have 1 Open Shelve,1 Box Fixed Shelve With Sliding Shutter. Mobile Pedestal Of Size 450mm(L)X 400mm(D)X 630mm(H) , Having 2 Drawers + 1 Filling Drawer With Castors In Provided With Central Lock For Security And Handles Are Provided For Easy Of Opening. All The MDF Borad Are Is-14587-1998 With Confirm To Din 68861.Iso 9001- 2015 Quality Certification Confirming To Astm D 4499 Standards For Viscosity And Thermal Stability.The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org" in each case. (Model No Theon/A) -2 Nos.
ix	Providing and Supplying High Back Leatherette Chair In Black Colour With Matte Finish. High Back 360° Degree Revolving Chair ,All Over Size Is : 590mm(L)X 505mm(D)X 1280mm(H) ,The Chair Made Of Full Leatherette In Black Colour .It Will Comes In Matte Black Finish Finsih In Contemporary Style .Details :Arms : Chrome Finish Arms With Pu Padding .Use Of Ply: 12 Mm Thick Hot Pressed Bwr Plywood (Is Grade - 303 For Seat And Back) .Seat: 40 ± 2 Mm Thick Polyurethane Foam With Density 32 (±3) Kg Per Cu Meter For Best Quality Cushioning In Seat ,Back : 40 ± 2 Mm Thick Polyurethane Foam With Density 32 (±3) Kg Per Cu Meter For Best Quality Cushioning In Back . Backrest Support Foam Design Based On Symmetrical Lumbar Support.Mechanism : Knee Tilt Mechanism .Only Seat Size Is 505mm(L)X 505mm(D)X 610mm(H) & The Back Size Is 590mm(L)X 710mm(H)Seat Maximum Height Is 610mm & Minimum Height Is 510mm & Back Height From Floor Maximum Height Is 1280mm & Minimum Height Is 1180mm.Gas Lift 100 Mm Telescopic Hydraulic.Base : 650 Mm Chrome Base With Smooth Castors.The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org" in each case. (Model No. Rich/37815/HB/XX) - 2 nos.

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48, REGAL BUILDING
CONNAUGHT PLACE
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SAGAN GARG
CA-NO.-99/22499



SR. NO.	DESCRIPTION OF ITEM
x	Providing and Supplying Visitor Chair-Leatherette : Low Back Leatherette Chair In Black Colour With Matte Finish.Specification : Durian - - Office Seating - - Craze Chair ,Type : Low Back 360° Degre Revolving Chair Sku : Rich/37815/Lb/Xx,All Over Size Is : 660mm(L)X 505mm(D)X 1105mm(H) ,The Chair Made Of Full Leatherette In Black Colour .It Will Comes In Matte Black Finish Finsih In Contemporary Style .Details : Arms : Chrome Finish Arms With Pu Padding .Use Of Ply: 12 Mm Thick Hot Pressed Bwr Plywood (Is Grade - 303 For Seat And Back) .Seat: 40 ± 2 Mm Thick Polyurethane Foam With Density 32 (±3) Kg Per Cu Meter For Best Quality Cushioning In Seat ,Back : 40 ± 2 Mm Thick Polyurethane Foam With Density 32 (±3) Kg Per Cu Meter For Best Quality Cushioning In Back . Backrest Support Foam Design Based On Symmetrical Lumbar Support.Mechanism : Knee Tilt Mechanism .Only Seat Size Is 525mm(L)X 525mm(D)X 610mm(H) & The Back Size Is 660mm(L)X 570mm(H).Seat Maximum Height Is 610mm & Minimum Height Is 510mm & Back Height From Floor Maximum Height Is 1105mm & Minimum Height Is 1005mm
	.Gas Lift 100 Mm Telescopic Haudraulic.Base : 650 Mm Chrome Base With Smooth Castors. The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org" in each case.(Model No Rich/37815/LB/XX) - 7 Nos
xi	Providing & Suppling Placing in Position Of Console Table ,the Desk Primary Work Surface Use Premium Quality Materials , Which Give More Surface Area For Work ,Table Top Made Of 25mm Thick Pre-laminated particle board.Table Top Supported With Non Toxic Ms Powder Coated "C" Shape Metal Legs Verticle Of Size 50mm X 50mm X 1.6mm And Connectors Horizontal of Size 40mm X 40mm X 1.6 Mm Ms Pipe. The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org" in each case.
a	Size :- 1500L x 600D x 1050Ht in mm - 1 Nos
xii	Providing & Suppling Placing in Position of Discussion Table in Rectangular shape,the table overall dimension are 1800(L) x 900(D) x 750(Ht) made with primary quality products Which Give More Surface Area For Work ,Table Top Made Of 25mm Thick Pre-laminated particle board.Table Top Supported With Non Toxic Ms Powder Coated "C" Shape Metal Legs Verticle Of Size 50mm X 50mm X 1.6mm And Connectors Horizontal Of Size 40mm X 40mm X 1.6 Mm Ms Pipe. The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org" in each case.- Model No MOD -1 Nos
xiii	Providing & Suppling Placing In Position of Discussion Chair ,Overall dimension are (W) 550mm X (D) 660mm X (H) 1010mm.With a modern profile & comfortable cushioning, the chair is designed for tableside lingering. Premium fabric upholstery in beige masterfully tailors the seat and tapered back with distinctive stitch detail, elegantly perching on dark Walnut finished solid wood legs in refined sophistication. Featuring with Kiln-dried solid wood construction makes it warp and scratch-resistant,Tapered cushioned backrest and firm seat offer comfortable seating experience and Decorative stitch details on the back compliments the design. The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org" in each case. Model No ZELDA/DC- 8 Nos

SR. NO.	DESCRIPTION OF ITEM
xiv	Providing & Suppling Placing in Position of King Size Double bed with storage of size 2000x 2100 wooden with back cushion in 1 st class Hardwood , Plywood - 12mm thick for Top & Bottom BWR, Upholster - 75mm thick foam cushion duly covered with tapestry (as approved by Engineer-in-Charge), Length inner side -2100 width inner side 2000 Height head rest 450, Melamine finish, Ornamental carving work on Head rest & foot rest, two side top opening for storage, superior carpentry work and all as directed by Engineer-in-Charge. . The Seller / Company should be ISO-9001:2015, ISO-14001:2015, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, INDIAN DESIGN MARK, AIOTA,& FSC Certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1(One) certified and an official product link/screenshot of the product listing's must be provided from www.bifma.org" in each case.- Model No -1 Nos
2	INVENTORY OF EQUIPMENTS FOR INDOOR GAMES:
i	Billiards Table - 01 No.
ii	Table Tennis Table - 03 Nos.
iii	Carrom Board - 04 Nos.
iv	Chass Board - 03 Nos.
v	Air Hockey table - 01 No.
vi	Basket twin - 01 No.
3	INVENTORY OF EQUIPMENTS FOR GYM:
i	Treadmill- 3 Nos. COMMERCIAL TREADMILL: 4HP AC Continuous Duty Power Motor, Incline Range from 0-15 levels, Speed Range from 0.8~20Km / hr, Programs - 6 presets (with 10 intensities) / 1 Manual / 3 HRC / 4 User / 1 Random / 1 Body Fat test Program, Data Readout - Time / Speed / Distache / Incline / Calories / Pulse / Body Fat, Running Belt: 63.4"x 21.5", Fingertip Quick controls on handrails, Weight - 145 Kg / 320 Lbs. Dimension: 79.9"x 36.8"x 55.5" (unfolded)
ii	Press bench (4 No.) Press bench: Length (cm) 170 Width (cm) 166 High (cm) 137 Weight (kg) 69
iii	Set of Doumbles including Rod and Stand- 2 Nos. DUMBBELL RACK: Length (cm) 159 Width (cm) 81 High (cm) 98 Weight (kg) 70
iv	Multi gym equipment -1 No. Commercial Multi Gym : Innovative design and ideal for corporate & society use, 6 station gym with 2 steel weight stacks of 70 Kgs. each, Multiple Exercise Function - Leg extension / curl, Leg press, Hi-Lo pully, Lat pull, Bicep curl, Pec Dec, Multi press, Tricep extension, Abdominal crunch, Bench press, Vertical Knee raise, Chin up & Dips stand, Durable powder coated finish, Comfortable seat pads, Arc cover for protection
v	Leg Pull down machine- 2 No. Leg Extension/ Leg Curl,200lbs: Length (cm) 100 Width (cm) 71 High (cm) 224 Weight (kg) 40
vi	Leg Curl machine- 2 No. Leg Extension/ Leg Curl,200lbs: Length (cm) 146 Width (cm) 125 High (cm) 152 Weight (kg) 229
vii	Cross walk- 2 Nos
4	GLASS MIRROR
i)	Providing and fixing glass mirror with wooden back and moulding as per design, specifications and direction of CGEWHO/Architect.


GARG & ASSOCIATES
 42, RESAL BUILDING
 CONNAUGHT PLACE
 NEW DELHI-110001
 GARG GARG
 CA-NO.-98/28498



CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
FOR BOUNDARY WALL	
SCHEDULE D4	
S.No.	DESCRIPTION
1.0	FINISHING
1.1	Dismantling old plaster, raking out joints and cleaning the surface for plaster including disposal of rubbish to the dumping ground outside the site.
1.1	Providing & applying Ready mix plaster with sand ready mix dry mortar in bags for plastering from the approved manufacturer in readymade PP bags of high quality laminated bags/Ad star bags. The specifications for cement used should be in line with IS 4031-1988 for physical tests and IS 1542-1977 & IS 2116-1980 accordingly. The power additives used should be of good quality make. The Ready Mix Mortars should comply to IS 2250-1981 with water to power ratio of 0.16-0.19 and having min 28 day pullout strength requirement of >0.3 MPa (as per ASTM D 7234-12) and 28 days compressive strength of > 5MPa (as per ASTM C 109-95). Also product should meet the VOC standards of <1% by Mass, including scaffolding, tool & plants etc Complete
a)	12 mm Ready Mix plaster on 230mm thick brick walls.
b)	15mm Ready Mix plaster on the rough side of single or half brick wall.
1.2	Making HUDCO Logo with name in Two or more layers of plaster in cement mortar 1:6 (1 cement :6 fine sand) at every alternate panel of the road side boundary wall.
1.3	Applying priming coat with ready mixed primer of approved brand & manufacturer on steel work.
1.4	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade with two or more coats on new work.
1.5	Finishing exterior walls with acrylic textured painting (exterior grade) applied @ 3.28 kg/10 sqm over and including priming coat applied @ 2.20 lt/10Sqm of approved make shade and colour on all heights and levels. The rate shall include all operations of work required for painting at all heights and as per specifications.
1.6	Providing and fixing PVC conduit pipes 32 mm dia in pillars/columns including all accessories like junction box, bend, tee etc complete all specified and directed at site
1.7	Demolishing plaster and repair work wherever required shall be including in quoted price


GARG & ASSOCIATES
 48, REGAL BUILDING
 CONNAUGHT PLACE
 NEW DELHI-110001
 GARG GARG
 CA-46-19728498



CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
FOR ROAD WORK	
SCHEDULE D5	
S.No.	DESCRIPTION
1.0	Box cutting upto 25 cm depth in road in all sorts of soil (incl. soft or hard soil) spreading the soil uniformly over the trenches or disposal of the earth within the site in low lying areas as per direction of the site engineer and consolidation of the sub grade to correct level and grade by using 8 ton roller etc. and disposal of surplus earth outside the boundary complete in all respects inclusive of cost of all labour and materials carriages etc. as per specifications and the direction of CGEWHO/Architect.
1.1	Filling selected good earth laid in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming & watering all as directed at site.
1.2	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth lead up to 50 meters.
1.3	Extra for compaction of earth work in embankment under optimum moisture conditions to give at least 95% of the maximum dry density(proctor density)
1.4	Supplying and laying spreading and compacting stone aggregate of specified sizes of WBM specifications including spreading in uniform thickness, hand picking, rolling with 3 wheeled road / vibratory roller 8-10 tonne in stages to proper grade and camber, applying and brooming requisite type of screening / binding material to fill up interstices of coarse aggregate watering and compacting to the required density as per design and drawing.
1.4.1	90mm to 63mm size stone aggregate.
1.4.2	Stone screening 13.2mm nominal size (Type A)
1.4.3	Stone screening 11.2mm nominal size (Type B)
1.4.4	Moorum
1.5	Providing and laying 100 mm thick cement concrete 1:4:8 (1 cement: 4 coarse sand: 8 stone aggregate 40mm nominal size) mechanically vibrated using surface vibrators, including form work, curing, complete all as specified.
1.6	Providing 120 micron polythene sheet including minimum overlaps of 300MM and lying on a consolidated bed cement concrete & be nailed at appropriate locations distances as required complete all as specified.
1.7	Providing and laying minimum 100 mm design mix Vacuum dewatered cement concrete broom finish in roads, driveways having a minimum works test beam flexural strength of 30 kg. per cm ² . at 28 days using not less than 340 Kg. of cement per cum of finished concrete mix with poly propylene plast fibre @ 900 gms per cum or as per manufacturer's instructions), coarse sand and graded stone aggregate of 20mm nominal size in appropriate proportions as per specified design criteria approved by CGEWHO/Architect mechanically vibrated using needle and surface vibrators including steel form work with sturdy M. S. channel sections including curing and providing and filling construction joints and dummy joints with approved joint filler and primer including rounding of the edges and filling the grooves 10x25mm deep at top for construction joints and 10mmx50mm deep at top for dummy joints with joint sealing compound (conforming to grade B of IS : 1834) including making necessary arrangements for expansion joints etc. all complete as per design and drawing.
1.7.1	With steel reinforcement CRS TMT bars conforming to FE 500D or above 8 mm dia 200 center to center bothways
1.8	Painting roads, pathways, driveways etc and marking with adequate no. of coats to give uniform finish with road marking paint of superior make as approved by the CGEWHO/Architect i/c cleaning the surface of all dirt, scales, oil, grease and other foreign material etc. and lining out complete.
	New work (two or more coats) for marking devider line, line at edge of road & Zebra crossings etc



S.No.	DESCRIPTION
1.9	Manufacturing supplying and fixing retro reflective signage boards made up of 2mm thick aluminium sheet face to be fully covered with high intensity and encapsulated lens type heat activated retro reflective sheeting conforming to type - III of ASTM-D-4956-01 as approved by CGEWHO/Architect letters, borders etc. as per IRC : 67-2001 in silver white with blue colour back ground and with high intensity grade, pasted on substrate by pressure sensitive adhesive backing which shall be activated by applying pressure conforming to class II of ASTM-D-4956-01 and fixing the same to the plate of structural frame work by means of suitable sized aluminium alloys, rivets or bolts & nuts @ 300 mm centre to centre all along the periphery as well as in two vertical rows along with theft resistant measures including the cost of painting with two or more coats of epoxy paint in grey colour on the back side of aluminium sheet including appropriate priming coat. The rate includes the cost of rounding off the corners, lowering down the structural frame work from the gantry, fixing and erecting the same in position all complete as per drawings, specification and direction of the CGEWHO/Architect. Structural frame work including M.S. plate to be provided.
	Informatory road signage.
1.10	Providing and laying 80mm thick factory made cement concrete interlocking paver block of M-30 grade made by block making machine with strong vibratory compaction and of approved size and design/shape laid in required colour and pattern over and including 50mm thick compacted bed of coarse sand, filling the joints with coarse sand etc. all complete as per the direction of CGEWHO/Architect.
1.11	Providing and laying 80mm thick factory made cement concrete Grass paver block of M-30 grade made by block making machine with strong vibratory compaction, of approved size, design & shape, laid in required colour and pattern over and including 50mm thick compacted bed of coarse sand, & cavities to be filled up with sweet earth complete all as specified & as per direction of CGEWHO/Architect
1.12	Providing and laying 100x100x100 mm thick Black granite stone Cobbles in ramp from main road to gate and in front of Ramp to basement of approved colour over min 20mm thick cement mortar 1:3 (1cement : 3 coarse sand) and cavities to be filled up with cement mortar 1:3 (1cement : 3 coarse sand) complete all as specified & as per direction of CGEWHO/Architect
1.13	Providing and laying Maddalian of Granite stone/Udaipur Green Stone/ Marble Stone in road in front of Block's Entrance Lobby of approved pattern over min 20mm thick cement mortar 1:3 (1cement : 3 coarse sand) and grinding & polishing complete & as per direction of CGEWHO/Architect
1.14	Providing and laying at or near ground level factory made Kerb stone of M-25 grade cement in position to the required line, level and curvature jointed with cement mortar 1:3 (1 cement : 3 coarse sand) including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5mm) including making drainage opening wherever required complete etc. as per direction of CGEWHO/Architect. Precast C.C. kerb stone shall be approved by CGEWHO/Architect.
1.15	Providing and fixing 25mm thick Paving Tiles in pathway over min 20mm thick cement mortar of 1:4 (1 cement : 4 c sand) over 150 thickness of PCC as per drgs including the finishing of joints with cement mixed with colour matching to the shade of stone.
1.16	Providing & fixing saucer drain of inside average dimension 300 wide 75mm th. In cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 stone aggregate 20mm nominal size), along the road as per drawings & details. The precast drains to be fixed in CM 1:4 over 1:4:8 concrete in line and level all as directed by CGEWHO/Architect
1.17	Providing and Fixing RCC Pipe NP-2 grade as Sleeves for water supply, electrical cable etc. as shown in drg. below the Road surface at the desired depth as per instruction of CGEWHO/Architect.
1.18	Providing and fixing Factory made heavy duty Modified Thermoplastics (Polymer Rubberized) speed breakers fixed securely to the roads with fastners as per specification and as directed by CGEWHO/Architect.

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
EXTERNAL FIRE FIGHTING WORKS	
SCHEDULE D6	
S.No.	DESCRIPTION
A.	FIRE HYDRANT SYSTEM
1.0	Providing, laying, jointing, testing and commissioning of following sizes of MS 'C' Class (Heavy duty) pipes conforming to IS-1239 with all accessories like orifice plate(of required dia), all fittings (standard MS fitting with welded joint shall be used on the pipes) including tees, elbows, reducers, union, flanges, rubber gaskets, GI nuts bolts, washer including supporting/fixing the pipe on floor / wall /ceiling with clamps, hangers (using anchor fastners) as per specification. G.I. pipe sleeve of suitable higher size shall be provided wherever the pipes are crossing the walls/floors and sealing the sleeves with glass wool in between & fire sealant compound at either end all as per Project Manager's / Consultants requirements including cutting holes and chases in brick, RCC work and making good the same to original conditions complete in all respects. All hangers, clamps, brackets etc. shall be of galvanized iron unless specified otherwire and then supply of the same shall also be included for rates under this head.
	Welding of any kind on the galvanized support / hanger shall not be permitted including synthetic enamel paint of approved shade over a coat of zinc primer.
a.	80 mm dia
b.	100 mm dia
c.	150 mm dia
2.0	Providing two coats of synthetic enamel paint of approved shade over a coat of primer. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. Including painting of legends both direction arrow as per the approval of the Project Manager.
a.	80 mm dia
b.	100 mm dia
c.	150 mm dia
3.0	Providing, laying, jointing and testing in trenches the following sizes of Ductile Iron pipes Class K-9 conforming to IS: 832-:2000 with accessories like orifice plate(of required dia), fittings including tees, elbows, reducers, flanges, rubber gaskets, GI nuts, bolts and washers including excavation in all kind of soil, refilling, ramming, removing the excavated surplus material, providing adequate support to the pipe and making good the same complete as required. Rate shall include for dewatering necessary to execute the work. The pipe shall not be less than 1.0 m below ground level at any point. Pipes shall be embedded all around 150mm thick compacted jamuna sand and including thrust blocks in cement concrete (1:2:4). The application process shall be strictly according to manufacturer's specification.
a.	80 mm dia
b.	100 mm dia
c.	150 mm dia
4.0	Supplying and fixing Single headed Gunmetal external yard hydrant valve with 1 No. 63 mm dia instantaneous FM Gunmetal/Stainless Steel coupling and cast iron wheel, ISI marked, conforming to IS 5290 (type A) with blank Gunmetal/Stainless Steel cap and chain as required :
5.0	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia Stainlesssteel male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required.
6.0	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red,conforming to IS 884 complete with the following as required. 20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585 20 mm nominal internal dia gun metal globe valve & nozzle. Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.

S.No.	DESCRIPTION
7.0	Providing and Fixing 63 mm dia Stainless Steel instantaneous pattern branch short pipe , 20 mm dia nozzle conforming to IS 903, suitable for inter connection to hose pipe coupling complete as required.
8.0	Providing & fixing standard carbon steel fireman axe with rubber insulated handle tested to 20000 Volts.
9.0	Providing, installation, testing and commissioning of stainless steel Y-strainer fabricated out of 1.6 mm thick stainless steel, Grade 304, sheet with 3 mm dia holes with stainless steel flange.
a.	150 mm dia
b.	200 mm dia
10.0	Providing & fixing neoprene rubber single arch expansion joint (anti vibration bellow) as per manufacturers specifications. Tested to a pressure of 16 Kg/Cm ² including all necessary fittings complete as required.
a.	80 mm dia.
b.	150 mm dia.
c.	200 mm dia.
11.0	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :.
a.	80 MM NB
b.	150 MM NB
c.	200 MM NB
12.0	Providing, installation, testing and commissioning of non-return valve of following sizes confirming to IS: 5312 complete with rubber gasket, GI bolts, nuts, washers etc.as required :
a.	80 MM NB
b.	150 MM NB
13.0	Supply, fixing, testing & commissioning of 25 mm dia inspecting and testing assembly with gun metal valve, sight glass, by pass valve and connection to the drain line as required to complete the system.
14.0	Providing & fixing dial pressure gauge complete in all respects. (Make : H Guru / FIBIG)
a.	for 80 mm diameter pipe
b.	for 150 mm diameter pipe
c.	for 200 mm diameter pipe
15.0	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and paintingwith synthetic enamel paint of approved shade as required.
16.0	Providing and fixing of cast iron body 150 mm dia Draw out connection in Under ground water storage tank with heavy class MS suction pipe of required length, foot valve, suction coupling in conformity with local regulations complete in all respects. (MAKE : Newage / Safeguard / Padmini)
17.0	Supplying and fixing of fire brigade connection of cast iron body with gun metal male instantaneous inlet couplings complete with cap and chain as reqd. for suitable dia MS pipe connection conforming to IS 904 as required :
a.	4 way - 150 mm dia M.S. Pipe

S.No.	DESCRIPTION
18.0	Providing and fixing weather proof standard fire hose cabinet (900 mm x 600 mm x 450 mm) outdoor type made of not less than 14 SWG MS sheet having glassed hinged door (5 mm thick glass) including necessary locking arrangement with handle for housing hydrant valve, two nos.15 meter long fire hose pipes, branch pipe as required as per drawings, including brackets for mounting accessories, painting (one coat primer and two coat of fire red colour). The cabinet shall be mounted on self standing mounted type painted MS Angle iron frame as required. The words "FIRE HOSE" to be painted on the box.
19.0	Supplying, fixing, testing & commissioning of double flanged sluice valve of rating PN 1.6 with non rising spindle, bronze/gun metal seat, ISI marked complete with nuts, bolts, washers, gaskets and conforming to IS 780 of following sizes as required
a.	150 MM NB
20.0	Constructing masonry Chamber 90x90x100 cm inside, in brick work in cement mortar 1:4 (1 cement : 4 coarse sand) for sluice valve, with C.I. surface box 100 mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design :
a.	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5
21.0	Supply & erection of ISI marked portable fire extinguishers , wall mounted type, wall brackets complete in all respect as per standard item with all accessories, delivery hose & nozzle wherever required, including fixing on walls as per the directions of Engineer-in-charge.
a.	Water CO2 type. 9 Lt.capacity (IS:940)
b.	CO2 gas type. 4.5 kg. Capacity (IS:2878)
22.0	Supply & fixing of 4 nos. G.I. round bottom fire buckets of 9.5 liters capacity filled with sand including proper supporting / mounting arrangements in MS angle iron frame, painted by fire red colour over two coats of red oxide paint and written with white paint "FIRE" complete in all respects as per the directions of Engineer-in-charge.
Note: All valves shall be of minimum 16 Kg/sq.cm working pressure	

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
FOR EXTERNAL WATER SUPPLY	
SCHEDULE D7	
S. No.	DESCRIPTION
1	DISTRIBUTION NETWORK FOR FRESH WATER SUPPLY INCLUDING TUBE WELL AND MUNICIPAL LINE TO
1.1	Excavating trenches upto 1.5 meter depth in all kind of soil of required width for pipes. including excavation for sockets and dressing of sides ramming of bottoms including getting out the excavated soil & then returning the soil as required, in layers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering, etc & disposing of surplus excavated soil as directed within a lead of 50m or as directed at site by engg-in-charge.
1.1.1	All kinds of soil
	Pipes etc from 80 mm and above but not exceeding 300 mm dia.
1.2	Supply, laying, jointing, testing and commissioning of ISI marked Ductile Iron pipes & fittings class K-9 complete in all respects.
1.2.1	80 mm
1.2.2	100 mm
1.2.3	150 mm
1.3	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc.
	External work
1.3.1	25 mm dia nominal bore
1.3.2	32 mm dia nominal bore
1.3.3	40 mm dia nominal bore
1.3.4	50 mm dia nominal bore
1.3.5	65 mm dia nominal bore
1.3.6	80 mm dia nominal bore
1.4	Painting G.I. pipes and fittings with two coats of anti-corrosive bitumastic paint of approved quality :
1.4.1	25 mm diameter pipe
1.4.2	32 mm diameter pipe
1.4.3	40 mm diameter pipe
1.4.4	50 mm diameter pipe
1.4.5	65 mm dia nominal bore
1.4.6	80 mm dia nominal bore
1.5	Providing and fixing C.I. double acting air valve of approved quality with bolts, nuts, rubber insertions etc. complete (The tail pieces, tapers etc if required will be paid separately) :
1.5.1	50 mm dia
1.5.2	80 mm dia
1.6	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :
1.6.1	25 mm nominal bore
1.6.2	32 mm nominal bore
1.6.3	40 mm nominal bore
1.6.4	50 mm nominal bore
1.7	Supply, fixing in position, testing ISI marked cast iron double flanged sluice valves as per IS:14846-2000, (PN 10) with SS stem, bolts, nuts, 3 mm thick rubber gaskets including transporting to worksite, Complete as per drawings & directions of the CGEWHO/Architect.
1.7.1	80 mm nominal dia
1.7.2	100 mm nominal dia
1.7.3	150 mm nominal dia
1.8	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering (for thrust blocks at bends and junctions of water lines) by 1:2:4 (1 cement : 2 coarse sand : 4 graded stone agg. 20 mm
1.9	Providing and fixing G.I. Union in GI pipe including cutting and threading the pipe and making long screws etc. complete(New work)
1.9.1	25 mm nominal bore
1.9.2	32 mm nominal bore
1.9.3	40 mm nominal bore
1.9.4	50 mm nominal bore
1.9.5	65 mm dia nominal bore
1.9.6	80 mm dia nominal bore
1.10	Providing and fixing in position pre-cast R.C.C. manhole cover and frame of required shape and approved quality
1.10.1	LD- 2.5, Rectangular shape 600*450 mm internal dimensions

S. No.	DESCRIPTION
1.11	Constructing masonry Chamber 30x30x50 cm inside, in brick work in cement mortar 1:4 (1 cement :4 coarse sand) for gate valve and stop cock , with C. I. surface box 100x100 x75 mm (inside) with hinged cover fixed in cement concrete slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12mm thick, finished with a floating coat of neat cement
1.11.1	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5
1.12	Providing and laying cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone agg. 20 mm nominal size) for thrust blocks at bends and junctions of water lines including necessary excavation, centering, shuttering etc as directed and required at site to complete the work..
2 DISTRIBUTION NETWORK FOR RISING MAIN WATER SUPPLY	
2.1	Excavating trenches upto 1.5 meter depth in all kind of soil of required width for pipes. including excavation for sockets and dressing of sides ramming of bottoms including getting out the excavated soil & then returning the soil as required, in layers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering, etc & disposing of surplus excavated soil as directed within a lead of 50m or as directed at site by engg-in-charge.
2.1.1	All kinds of soil
2.1.1.1	Pipes etc from 80 mm and above but not exceeding 300 mm dia.
2.2	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc.
	External work
2.2.1	20 mm dia nominal bore
2.2.2	25 mm dia nominal bore
2.2.3	32 mm dia nominal bore
2.2.4	40 mm dia nominal bore
2.2.5	50 mm dia nominal bore
2.2.6	65 mm dia nominal bore
2.3	Providing, fixing and testing in position ISI marked (IS : 1239 for upto 150 mm dia and IS : 3589 for 200 mm and above dia) G.I pipes (medium class) in concealed or exposed works complete with all necessary G.I fittings i.e. sockets, elbows, tees, bends, unions, plugs and clamps including cutting chases and making good the walls (on terrace the pipes shall be supported at suitable interval and inside ducts these shall be properly clamped through duct walls). The Galvanization shall conform to IS : 4736. The work shall include the painting with two coats of anti-corrosive paints on buried and concealed pipe works and with two coats enamel paint of approved quality and shade over a coat of primer on exposed pipe works including bellows / expansion joint wherever pipe crosses exp joint, complete as required by the Engg-in-charge for proper completion of the work.
2.3.1	80mm nominal bore (wall thickness - 4.0 mm)
2.4	Painting G.I. pipes and fittings with two coats of anti-corrosive bitumastic paint of approved quality :
2.4.1	25 mm diameter pipe
2.4.2	25 mm diameter pipe
2.4.3	32 mm diameter pipe
2.4.4	40 mm diameter pipe
2.4.5	50 mm diameter pipe
2.4.6	65 mm dia nominal bore
2.4.7	80 mm dia nominal bore
2.5	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :
2.5.1	25 mm nominal bore
2.5.2	32 mm nominal bore
2.5.3	40 mm nominal bore
2.5.4	50 mm nominal bore
2.5.5	65 mm dia nominal bore
2.6	Supply, fixing in position, testing ISI marked cast iron double flanged sluice valves as per IS:14846-2000, (PN 10) with SS stem, bolts, nuts, 3 mm thick rubber gaskets including transporting to worksite, Complete as per drawings & directions of the Engineer-in-charge.
2.6.1	80 mm nominal dia
2.6.2	100 mm nominal dia

S. No.	DESCRIPTION
2.7	Constructing masonry Chamber 90x90x100 cm inside, in brick work in cement mortar 1:4 (1 cement : 4 coarse sand) for sluice valve , with C.I. surface box 100 mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design
2.8	Constructing masonry Chamber 30x30x50 cm inside, in brick work in cement mortar 1:4 (1 cement :4 coarse sand) for stop cock, with C. I. surface box 100x100 x75 mm (inside) with hinged cover fixed in cement concrete slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12mm thick, finished with a floating coat of neat cement complete as per standard design : For (Gate Valve)
2.8.1	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5
2.9	Providing Precast Cement Concrete / SFRC Valve Chamber cover and frame conforming to IS : 12592-2002., The concrete mix should be not less than M 30.
2.9.1	L D- 2.5, Rectangular shape 600*450 mm internal dimensions
2.10	Providing and laying cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone agg. 20 mm nominal size) for thrust blocks at bends and junctions of water lines including necessary excavation, centering, shuttering etc as directed and required at site to complete the work..
3 DISTRIBUTION NETWORK FOR IRRIGATION WATER SUPPLY (RECYCLED)	
3.1	Excavating trenches upto 1.5 meter depth in all kind of soil of required width for pipes. including excavation for sockets and dressing of sides ramming of bottoms including getting out the excavated soil & then returning the soil as required, in layers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering, etc & disposing of surplus excavated soil as directed within a lead of 50m or as directed at site by engg-in-charge.
3.1.1	All kinds of soil
a)	Pipes upto 80 mm dia.
b)	Pipes etc from 80 mm and above but not exceeding 300 mm dia.
3.2	Providing Precast Cement Concrete / SFRC Valve Chamber cover and frame conforming to IS : 12592-2002., The concrete mix should be not less than M 30.
3.2.1	L D- 2.5, Rectangular shape 600*450 mm internal dimensions
3.3	Supply, laying, jointing, testing and commissioning of ISI marked H.D.P.E. pipes (PE 100) as per IS : 4984, including transportation upto the site, jointing by electro fusion welding for upto 110 mm dia pipe and butt fusion welding for above 110 mm dia pipe, providing and fixing all fittings i.e. bends, tees, couplers, junctions, tapers, reducers, adopters, end caps, flanges with nut and bolts for fixing of appurtenances complete in all respects. Upto 110 mm dia pipe will be supplied in coils only.
3.3.1	25 mm. OD. (PN 10)
3.3.2	32 mm. OD. (PN 10)
3.3.3	40 mm. OD. (PN 8)
3.3.4	50 mm. OD. (PN 8)
3.3.5	65 mm. OD. (PN 8)
3.3.6	80 mm. OD. (PN 8)
3.4	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :
3.4.1	25 mm nominal bore
3.4.2	32 mm nominal bore
3.4.3	40 mm nominal bore
3.4.4	50 mm nominal bore
3.5	Providing & fixing of hand lever / butterfly handle operated forged brass body full way ball valve type garden hydrant valve with brass hose nippul having forged brass hard chrome plated mirror finish ball, steel handle with PVC grip, teflon seat, screwed ends tested to a pressure of 15 kg/sqcm complete.
3.5.1	15 mm nominal bore

S. No.	DESCRIPTION
3.6	Constructing brick masonry chamber 300 x 300 x 500 mm, inside with F.P.S. brick work in cement mortar 1: 4 (1 cement : 4 coarse sand) for Isolating Valve / garden hydrant , including fixing of CI/SFRC cover and frame in 150 mm thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size); necessary excavation, foundation concrete 1:4:8 (1 cement : 4 coarse sand: 8 graded stone aggregate 40mm nominal size) and inside plastering with cement mortar 1 : 3 (1 cement : 3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design.
3.7	Supply, fixing in position, testing ISI marked cast iron double flanged sluice valves as per IS:14846-2000, (PN 10) with SS stem, bolts, nuts, 3 mm thick rubber gaskets including transporting to worksite, Complete as per drawings & directions of the Engineer-in-charge.
3.7.1	80 mm nominal dia
3.7.2	100 mm nominal dia
3.8	Constructing masonry Chamber 90x90x100 cm inside, in brick work in cement mortar 1:4 (1 cement : 4 coarse sand) for sluice valve , with C.I. surface box 100 mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design
3.9	Providing and laying cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone agg. 20 mm nominal size) for thrust blocks at bends and junctions of water lines including necessary excavation, centering, shuttering etc as directed and required at site to complete the work..

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
FOR EXTERNAL DRAINAGE SYSTEM	
SCHEDULE D8	
S. No.	DESCRIPTION
1	Excavating trenches in all kind of soil of required width for pipes including excavation for sockets and dressing of sides, ramming of bottoms, including getting out the excavated soil & then returning the soil as required, in layers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering, etc & disposing of surplus excavated soil as directed within a lead of 50m.
1.1	up to 1.50 m depth
1.1.1	Pipes 80 mm to 300 mm diameter
1.2	1.50 m to 3.00 m depth
1.2.1	Pipes 80 mm to 300 mm diameter
1.2.2	Pipes exceeding 300 mm diameter
2	Supply of ISI marked (IS:458) Spigot & Socket type R.C.C. NP-2 Pipe suitable for rubber ring joint including supplying of rubber rings confirming to IS:5382 complete.
2.1	250 mm. dia. Spigot & Socket type RCC Pipes
2.2	300 mm. dia. Spigot & Socket type RCC Pipes
3	Laying and jointing Spigot & Socket type R.C.C. NP-2 Pipe suitable for rubber ring joints, including lowering in trenches, laid to correct levels up to required depth including testing of joints and connection with the respective manhole complete in all respects as per the direction of engg-in-charge.
3.1	250 mm. dia. Spigot & Socket type RCC Pipes
3.2	300 mm. dia. Spigot & Socket type RCC Pipes
4	Providing and laying in position cement concrete including the cost of centering and shuttering. (in all type of work upto plinth level) by 1:4:8 (1 cement : 4 coarse sand : 8 graded stone agg. 40 mm nominal size)
5	Providing and laying in position cement concrete including the cost of centering and shuttering (in all type of work upto plinth level) by 1:2:4 (1 cement : 2 coarse sand : 4 graded stone agg. 20 mm nominal size) for RCC bedding, benching etc complete
6	Constructing brick masonry road gully chamber 50x45x60 cm with bricks in cement mortar 1:4 (1 cement : 4 coarse sand) including 500x450 mm pre-cast R.C.C. horizontal grating with frame complete as per standard design : With common burnt clay F.P.S. (non modular) bricks of class designation 7.5
7	Constructing brick masonry road gully chamber 110x50x77.5 cm with bricks in cement mortar 1:4 (1 cement : 4 coarse sand) including 500x450 mm pre-cast R.C.C. horizontal grating with frame and vertical grating complete as per standard design : With common burnt clay F.P.S. (non modular) bricks of class designation 7.5
8	Constructing brick masonry circular manhole 1.22 m internal dia at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement : 4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard design :



S. No.	DESCRIPTION
	1.68 m deep with SFRC Cover and frame (heavy duty HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering all complete including Excavation, foot rests and 12 mm thick cement plaster at the external surface etc
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5
9	Extra depth for circular type manhole 1.22 m internal dia (at bottom) beyond 1.68 m to 2.29 m :
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5
10	12 mm cement plaster of mix:
	1:4 (1 cement: 4 fine sand)
11	Constructing brick masonry circular manhole 1.52 m internal dia at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement : 4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard design :
	2.30 m deep with SFRC Cover and frame (heavy duty HD- 20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering all complete including Excavation, foot rests and 12 mm thick cement plaster at the external surface.
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5
12	Extra depth for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m :
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5
13	12 mm cement plaster of mix
	1:4 (1 cement : 4 coarse sand).
14	Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) as per standard
	With 20x20 mm square bar
15	Extra for depth for manholes:
15.1	For 455x610 mm size
15.2	For 1100 x 500 mm inner size


GARG & ASSOCIATES
 48, REGAL BUILDING
 CONNAUGHT PLACE
 NEW DELHI-110001
 GARGAN GARG
 CA-No.-99/26499



CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
FOR EXTERNAL SEWERAGE SYSTEM	
SCHEDULE D9	
S. No.	DESCRIPTION
1	Excavating trenches in all kind of soil of required width for pipes including excavation for sockets and dressing of sides, ramming of bottoms, including getting out the excavated soil & then returning the soil as required, in layers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering, etc & disposing of surplus excavated soil as directed within a lead of 50m.
1.1	up to 1.50 m depth
1.1.1	Pipes 80 mm to 300 mm diameter
1.2	1.50 m to 3.00 m depth
1.2.1	Pipes 80 mm to 300 mm diameter
1.3	3.00 m to 4.50 m depth
1.3.1	Pipes 80 mm to 300 mm diameter
2	Open timbering in trenches including strutting and shoring complete. (Measurement to be taken of the face area timbered). The timbering will be done for pipes laid below 1.5 meter depth.
2.1	Depth not exceeding 1.5 meter
2.2	Depth 1.5 to 3.00 meter
2.3	Depth 3.00 to 4.50 meter
3	Providing, fixing, jointing, testing and commissioning of UPVC "ECODRAIN" structured wall Sewerage/Drainage Pipe conforming to IS:16098 (Part-I) with all fittings such as bends, tees, elbow. The wall thickness of pipe and technical characteristic conforms to IS:16098 (Part-I) in SN8. The fitting dimension conforming to BS: EN1401-1998. The jointing to be completed with rubber ring/solvent weld joint as suitable at site. Make- Supreme or equivalent
3.1	110 mm dia SN 8 Pipes
3.2	160 mm dia SN 8 Pipes
3.3	200 mm dia SN 8 Pipes
3.4	250 mm dia SN 8 Pipes
3.5	315 mm dia SN 8 Pipes
4	Providing, filling & compacting 150mm thickness of hard moorum in bedding & around of pipes and laying of jhamma brick layer in full width of pipe over filling.
4.1	110 mm dia SN 8 Pipes
4.2	160 mm dia SN 8 Pipes
4.3	200 mm dia SN 8 Pipes
4.4	250 mm dia SN 8 Pipes
4.5	315 mm dia SN 8 Pipes
5	Providing and fixing square mouth Gully trap/inspection chambers of Nu Drain complete with water tight GRP/SFRC cover with frame as per standard design including the cost of excavation, filling with moorum, cement concrete etc complete
5.1	With Ultra 250/315



CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
FOR TUBE WELL	
SCHEDULE D10	
S. No.	DESCRIPTION
CONSTRUCTION OF TUBE WELL	
1	Drilling 300 mm dia by ODEX method in all type of soil including hard & soft rock but including boulders. formulations including making strata charts, transportation, instalation, removal of tools & plants after completion of work all as per direction of CGEWHO/architect.
2	Supplying ,assembling lowering and fixing in vertical position:200 mm dia. Nominal bore PVC blind pipe heavey duty with sockets and having wall thickness as per BIS-12818-1992 with threaded sockets ends as required,200 mm dia. nominal bore Slotted PVC pipe heavey duty with sockets and having wall thickness as per BIS-12818-1992and slots 1.5mm to 2mm with threaded sockets ends as required ,Providing & fixing 200mm dia threaded well cap heavy duty, combined housing clamp to hold 200 mm dia hevdy duty housing pipe and 65 mm dia G.I. pipe class C to be fixed at top of the tube well and 4 nos. centering guide wires, fabrication of 150mm dia tail plug with all required specials complete,Supplying & surrounding including packing tube well assembly both before and after developement with gravel of approved quality of size 1.5x6mm complete,Providing and fixing of 150 mm dia plug with all required specials all complete including R,C,C chember & SFRC double seal frame & cover
	Making connection of 65 mm dia G.I. pipe delivery pipe to under tank nearby, including necessary excavation, protection of G.I. pipe and coupling with existing puddle flange.
3	Development of tube well to stabilization and sand free discharge of water with Air compressor complete,For a period upto 50 hours or as required beyond 30 hours
4	Testing of tube well with Air compressor for its yield as per ISI specifications and directions of the Engineer including sanitary sealing,Water sample testing of the newly developed tubewell.
5	Testing of quality of tube well water for Physical, chemical & Bacteriological characteristics of water from two separateapproved laboratories as per IS: 10500.
6	Supplying, installation, testing & commissioning of mono block submersible pump (Kirlosker/KSB make) for tube well bore with totally water & dust proof motor of 150 mm dia. housing piper. i) Head-80 meters,ii) Stages-10,iii) Power-10HP,iv) Capacity-25 LPS & v) Size of outlet-65 mm dia.
7	Supplying, installation, testing & commissioning of mortar control panel fixed with starter & M C B of 40Amp.TPN as incomer, on/off indicator lights, on/off push buttons, etc complete(Control panel shall be fabricated out of 14 S W G M.S. sheet & shall be powder coated of approved colour)(To be installed in pump house as instructed)
8	Providing and laying of 6 mm dia. S.Steel wire rope for suspending submersible pump within the bore well including Necessary fittings for teeing at both ends etc complete


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S. No.	DESCRIPTION
9	Supplying, laying, testing & commissioning of 3 core 10 sq mm XLP aluminum armoured cable in bore well, underground, existing pipes, over cable tray or on surface including necessary cable clips at 300mm center to center intervals, clamping, cable glands of required size, cable terminals as required etc complete. (Laying as per standard specifications)
10	Supply & fixing of 65 mm dia G.I. pipe C-class with G.I. socket and accessories, gate valve, nipple, elbow erection, clamp stainless steel rope complete.
11	Providing and fixing in position 65mm dia enclosed type water meter (bulk type) confirming to IS : 2373 including all necessary connecting accessories, T&P, labour and materials complete in all respects.
12	Construction chamber 300 x 300 x 450 mm (internal size) for supplying and housing 65 mm bore water meter ISI marked, built with 100 mm thick P.C.C. 1:5:10 base, 230 mm thick all four walls in cement mortar 1:4, all inside of walls & coarse sand) and finished with neat cement slurry, including necessary excavation & back filling, fixing of water meter with check nuts on either side complete in all respects.
13	Constructing brick masonry Tubewell chamber of 1800x 1200 mm internal dimensions with 75 class designation bricks in cement mortar 1:4 (1 Cement: 4 Coarse sand), foundation concrete 150 mm thick in cement mortar 1:3:6 (1 Cement: 3 Coarse sand: 6 graded stone aggregate of 40 mm nominal size), cement concrete flooring 1:2:4 (1 Cement: 2 Coarse sand: 4 graded stone aggregate 20 mm nominal size) finished with a coat of neat cement including Cement Slurry, Top covering of chamber 150 mm thick RCC Slab 1:2:4 with 2 Nos. 560 mm diameter SFRC Cover and frame with lifting arrangement including providing 25 mm dia Weep holes @ 450 mm C to C, necessary excavation, with 12 mm thick plastering in cement mortar 1:4 (1 Cement: 4 Coarse sand) inside and outside finished with a floating coat of neat cement complete as per Sketch.


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CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
FOR RAIN WATER HARVESTING	
SCHEDULE D11	
S.No.	Description
1	Rain water harvesting well shall be 2M dia x 3.5M (effective) depth with de-silting chamber of internal size of 5 M x 2.5M x 1.5M (effective) depth with earth work in excavation, back filling with available excavated earth, with necessary compaction and shifting of surplus earth outside by mechanical means as directed by HUDCO, PCC 1:4:8, 150mm thick foundation concrete, brick work of Class designation 7.5 in cement mortar 1:5, (1 cement : 5 coarse sand), PVC coated safety steel foot rest of 12mm dia MS bars grouted rigidly in cement concrete 1:2:4 @300mm c/c & providing 100mm dia weep holes @1.0m c/c, 200 mm thick RCC cover slab in cement concrete M-25 including providing and placing necessary steel bars to keep the provision of removable slab of approx. 1m width, filling 500mm thick of 50-150mm nominal size boulders, 500mm thick 5-10mm nominal size gravels and 500mm thick sand layer respectively, CI vent pipe, (100mm dia),
	250 to 300 mm dia borewell with 160mm dia uPVC slotted pipe and pea gravels filled alround, placing 560mm dia SFRC manhole cover with frame, screen, bafflewalls etc. including all necessary materials and equipments required for all relevant operations as required and as shown in relevant drawings.(Note: Structure to be got designed by Structural engineer for various components)
2	Approval of RWH scheme from the concerned authority.


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CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
FOR LANDSCAPING AND HORTICULTURE WORKS	
SCHEDULE D12	
SR. NO.	DESCRIPTION OF ITEM
	The contractor shall maintain the landscaped area, equipments and play courts etc along with horticulture upto 2 year from the date of completion of work
	The scope of work of landscape and horticulture if not specifically mentioned below shall broadly includes soft and hard landscape including roads, pavements, pathways on top of basement ,podium top planters, slopes, gradients, water bodies, feature walls, irrigation hydrants, plantation, dustbins, vertical plantations, irrigation systems etc complete.
1	Trenching in ordinary soil up to a depth of 60cm including removal and stacking of serviceable materials and then disposing of by spreading and neatly levelling with in a lead of 50m and making up the trenched area to proper levels by filling with earth or earth mixed with sludge or/and manure before and after flooding trench with water.
2	Supplying and stacking of sludge at site including royalty and carriage.
3	Supplying and stacking of good earth at site including royalty and carriage.
4	Supplying and stacking at site dump manure from approved source: Screened through sieve of I.S. designation 20mm
5	Supplying and stacking at site dump manure from approved source : Screened through sieve of I.S. designation 16mm
6	Supplying and stacking at site dump manure from approved source : Screened through sieve of I.S. designation 4.75mm
7	Rough dressing the trenched ground including breaking clods.
8	Uprooting weeds from the trenched area after 10 to 15 days of its flooding with water including disposal of uprooted vegetation.
9	Fine dressing of the ground.
10	Spreading of sludge, dump manure or/and good earth in required thickness.
11	Mixing earth and sludge or manure in proportion specified or directed.
12	Grassing with ' Doob ' grass or any other specified grass including watering and maintenance of the lawn till one year after completion of project. A thick lawn free from weeds and fit for mowing including supplying good earth if needed. In rows 7.5 cm apart or as specified in either direction.
13	Preparation of beds for hedging and shrubbery by excavating 60cm deep and trenching the excavated base to a further depth of 30cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50m lift up to 1.5 m complete.
14	Digging holes in ordinary soil and refilling the same with the excavated earth mixed with manure or sludge in the ratio of 2:1 by volume (2 parts of stacked volume of earth after reduction by 20% : 1 part of stacked volume of manure after reduction by 8%) flooding with water, dressing including removal of rubbish and surplus earth, if any with all leads and lifts : Holes 60 cm dia, and 60 cm deep.


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SR. NO.	DESCRIPTION OF ITEM
15	Providing and laying at or near ground level factory made kerb stone of M-25 grade cement in position to the required line, level and curvature jointed with cement mortar 1:3 (1 cement: 3 coarse sand) including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5mm) including making drainage opening wherever required complete etc. as per direction of CGEWHO/Architect (Precast C.C. kerb stone shall be approved by CGEWHO/Architect).
16	Painting of kerb stone with 02 coats of approved brand synthetic enamel paint over a coat of primer.
17	Supplying & planting of Trees in holes, including spreading of manure sludge & pesticise etc. complete. 1.8 m high trees 2.0 m high trees shrubs etc Flower plants etc
18	Making Tree guard 53 cm dia and 2 m high as per design including providing & fixing four leg 40 cm long of 30x3 mm flat riveted to tree guard and fixing 2 nos MS sheet rings 50x0.5 mm fixed with rivets complete in all respect including painting. One name plate of 1 mm thick MS sheet of size 250x100 mm shall be welded to the tree guard.
19	Providing & placing sufficient Stainless Steel dust bins of approved shape and size at appropriate places.
20	Providing and fixing Wrought Iron decorative benches as directed by CGEWHO/Architect.
21	Providing & fixing Sign boards/ Signages, block markers, direction indicators etc as directed by CGEWHO/Architect. The orientation, location may be changed by CGEWHO at site. i) Backlit SS Signboard for Complex Name & address including Led light fittings etc complete with Alphabet height approx 650mm& 425MM high at Gate as per approval of CGEWHO. ii) Backlit Acrylic Signboard with GI sheet box & MS work with Society's Name and Address including Led light fittings etc complete in Hindi & English of approx Size 8 mx1.5m.at Two places on Blocks as per approval of CGEWHO. iii) Backlit SS Signboard for Block Names including Led light fittings etc complete of approx Size 1mx1m at every Block at two places as per approval of CGEWHO. (total 10 nos) iv) SS Flat Numbering plates including necessary SS screws complete of approx Size 150mmx100mm at each flat. v) Direction Indicators as approved by CGEWHO/Architect.
22	Providing and fixing at or near ground level PCC (1 cement: 3 coarse sand) including the cost of required centering, shuttering and finishing including bed mortar complete. a) (300mmx125mmx600mm) precast cement concrete in kerb. b) (300x100x600) granite in kerbs, edging etc. as approved pattern and setting in position with cement mortar 1:3 (1 cement : 3 coarse sand)
23	Grass Track Pavers a) The Grass Paver to have interlock system to lock each other. The Grass Paver should have compressive strength of minimum 150 tons/sq mt , capable to take the load of the fire tender. The panel should have high level of porosity greater than 90%, porous for Grass, shrubs and low planters. Laying to be done on 50 mm sand bed over well compacted subbase / WBM/PCC as per manufacture specifications and directions of Engineer in charge b) Providing & laying 80mm thick factory made cement concrete grass paver block of M-30 grade with white cement cast in PVC/Rubber mould made by block macking machine with strong vibratory compaction with smooth finish & required size and design/shape laid in the permanent colour of bay or company and pattern oer and including 50mm thick compacted bed of coarse sand filling the joints with fine sand etc.all complete as per the direction of Engineer -in-charge.



SR. NO.	DESCRIPTION OF ITEM
24	Providing & laying 60mm thick factory made cement concrete interlocking paver block of M-35 grade or more IN Fire tender Path with white cement cast in PVC / Rubber mould made by making machine strong vibratory compaction with smooth finish and required size and design / shape laid in with permanent colour of bay or company and pater over and including 25 mm sand bed over 150 mm PCC and 150mm WBM and filing the joints with fine sand etc. complete as per the directions of the Engineer-in-charge.
25	Providing and laying 75 mm thick. river bed pebbles of required shape and size as per the approved sample complete near plants in central green.
26	Providing and laying 100x100x100 mm thick Black granite stone Cobbles in ramp from main road to gate of approved colour over min 20mm thick cement mortar 1:3 (1cement : 3 coarse sand) and cavities to be filled up with cement mortar 1:3 (1cement : 3 coarse sand) complete all as specified & as per direction of CGEWHO/Architect
27	Providing and fixing 25mm thick Paving Tiles in pathway over min 20mm thick cement mortar of 1:4 (1 cement :4 c sand) over 150 thickness of PCC as per drgs including the finishing of joints with cement mixed with colour matching to the shade of stone.
28	Providing and fixing 20 mm thick granite stone of approved quality on CLADDING with cement mortar 1:3 (1 cement : 3 coarse sand) with approved design and pattern, jointed with white cement slurry mixed with pigment to match the shade of the stone including necessary holdfasts, clamps and pins etc. as per requirement as per design and drawing of the Architects complete. a) Granite stone POLISHED finish b) Granite stone SAND BLAST finish c) Sand Blasted Mint Mosaic Sandstone
29	Providing and fixing GLASS MOSAIC tiles or equivalent or approved by the Architects on floors and sides of the water body as per approved design and pattern over a 20mm(average) thick cement mortar 1:3 (1cement :3 coarse sand) and jointed with white cement slurry mixed with pigment to match of the colour of tiles including cleaning of the tile surface complete . (Basic cost of tile Rs.80/-per sqft.)
30	WATER BODY/FEATURE WALL Providing, fixing, testing & commissioning of water features & Feature wall and fountains with civil work, waterproofing and all accessories complete. Filtration Systems & its accessories a Bio Filter 400 Dia b Dry Pump 5 HP c Dry Pump 0.5 HP e Suction Point f NL 409 W g Deck Box h Inlet Nozzles i Metal Spouts & Metal Mitifs j Main Drain Cover k Plumbing & electrical l All finishing work inc granite stone, sand stone, glass mosaic tile, porcelein tile in combination approved by CGEWHO.
31	PLANTERS Construction of planters with civil work including RCC, brick works, plaster, claddingetc complete. Providing and fixing 40 mm thick (two stones to be used) Prepolished granite of approved quality on COPING / SEATS with cement mortar 1:3 (1 cement : 3 coarse sand) with approved design and pattern, jointed with white cement slurry mixed with pigment to match the shade of the stone including making the moulding and edge polishing as per design and drawing of the Architects complete. (Basic cost of stone will be Rs.180/- per sft.)
32	Providing and fixing 20 mm thick Pre polished granite of approved quality on CLADDING with cement mortar 1:3 (1 cement : 3 coarse sand) with approved design and pattern, jointed with white cement slurry mixed with pigment to match the shade of the stone including necessary holdfasts, clamps and pins etc. as per requirement as per design and drawing of the Architects complete.


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SR. NO.	DESCRIPTION OF ITEM
	a) Granite stone FLAME finish
	b) Granite stone SHOT BLAST finish
	c) Granite stone LEATHER finish
33	Providing and fixing 20mm dia, 30cm long medium class PVC pipe spouts cut to required shape and fixed in brick or R.C.C work.
34	Providing and fixing 20mm thick Drain board in planter and landscape area to drain water to the drain channels in aa green areas above basement with pre fixed GEO TEXTILE FABRIC as per specifications and details complete to the satisfaction of architect/CGEWHO.
35	Supply of decorative stone planters (750 mm high, 750mm dia) - 10 Nos
36	Supply of decorative Pots (yucca) 1200 dia/ 1500 dia - 10 Nos
37	PERGOLA Providing, fabricating and erecting MS structural in MS pipe, RSJ channels, angles, flats, rods, plates for columns for PERGOLA/GAZEBO or frames etc. in welded and bolted as per design including the cost of all consumable materials such as welded rods, gases etc. including cutting bending, notching, nuts and bolts, drilling holes, washers gusset plates etc. complete with all tools and tackles, hoisting equipments, fabricated to the Architects design including the cost two or more coats of enamel paint of approved shade and colour over a coat of red oxide approved quality primer etc. complete.
38	Providing and fixing MS pergola with 1" thk. Wooden cladding seasoned or with High Pressure Laminate including the cost of necessary screws, scaffolding and spirit polish complete.
39	a) Providing and laying RCC columns in M25 including scaffolding, curing, casting of nut bolt, stiffeners, baseplate etc at desired location complete finished with granite cladding and top surface with half moulding etc complete as per drawing.
	SPRINKLER AND DRIP IRRIGATION SYSTEM
40	Sprinkler Irrigation Systems manufactured as per IS 14151 : Part 1 & 2 standards. Fittings, Gun Metal Sprinkler & HDPE Pipe. The system should be portable & flexible system as required to cover the entire landscape areas.
41	Drip Irrigation Systems through a network of valves, pipes, tubing and emitter as required to cover the entire landscaped area
42	Suction / Delivery Hoses & Garden tubing In grades as per application requirements manufactured as per IS: 15265 standards as required for garden irrigation as required to cover the entire landscaped area.
	KIDS PLAY AREA AND OPEN GYM EQUIPMENTS
43	Providing and fixing of Kids play area equipments like slide, double swings, sea saw etc complete (Basic rate of all equipment only shall be Rs. 1,50,000/-) including the cost of excavation, pcc, flooring and finishing etc
44	Providing and fixing rubber safety surface tiles 50mm thick complete with bevelled edge tiles for transition to grade, interlocking pins if any with BASF adhesive or its equivalent on PCC surface(thickness as per vendor recommendation) in kids play equipment area. (Brand Koochie/Sunflex)
45	Providing and fixing of open gym equipments like triple twister, air walker, leg press, horse rider, surf board etc complete (Basic rate of all equipment only shall be Rs. 1,50,000/-) including the cost of excavation, pcc, flooring and finishing etc
	SCULPTURES
46	Providing and fixing of 3 nos. Sculptures as per design, drawing and specifications complete. (Basic rate Rs. 5 Lac each)



CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
FOR GUARD ROOM & MAIN GATE	
SCHEDULE D13	
S.No.	DESCRIPTION
1.0	EARTH WORK
1.1	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30 cm in depth, 1.50 Mtr. in width as well as 10 sqm on plan) including disposal of excavated earth upto all leads and lift upto 1.5 mtr., disposed soil to be levelled and neatly dressed.
	All Kinds of Soil
1.2	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20 cm in depth: consolidating each deposited layer by ramming and watering in all leads and lifts
2.0	CONCRETE WORK
2.1	Providing and laying in position cement concrete of specified grade, including the cost of centering and shuttering. All work upto plinth level.
a	1:2:4 (1 cement: 2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size) in coping etc.
b	1:4:8 (1 cement : 4 coarse sand :8 graded stone aggregate 40 mm nominal size).
2.2	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size) with water proofing compound.
2.3	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.
3.0	REINFORCED CEMENT CONCRETE WORK
3.1	Providing and laying in position machine batched, machine mixed and machine vibrated nominal mix cement concrete of specified grade for reinforced cement concrete structural elements including the cost of centering, shuttering, finishing and admixtures in recommended proportions (as per IS: 9103) to accelerate, retard setting of concrete improve workability without impairing strength and durability as per directions of CGEWHO/Architect but excluding the cost of reinforcement steel.
a	In Foundations, Rafts, footings, Columns up to plinth level etc
b	All work in superstructure (any thickness) in all shapes and sizes.
c	Beams, plinth beams, girders, bressumers, cantilevers, suspended floors, lintels, roofs and folded steps & risers, staircases including spiral staircases, shelves, fins and paragola beams and planters etc.
3.2	Reinforcement (fe - 500D) for R.C.C. work including straightening, cutting bending, placing in position and binding all complete at all levels and in all R.C.C. items with 18 gauge binding wire and cover blocks.
a	Corrosion Resistant Steel (CRS) Thermo mechanically treated bars.
4.0	BRICK WORK
4.1	Brick work with bricks of class designation 7.5 in foundation and plinth in cement mortar 1:6 (1 cement:6 coarse sand).
4.2	Brick work with bricks of class designation 7.5 in superstructure in cement mortar 1:6 (1 cement:6 coarse sand).
5.0	STEEL WORK
5.1	Providing and fixing boundary wall railing, main gates and vicat gates by welding etc complete and fixing to the wall, floor with necessary C.C., holdfast etc & making good the same as per details shown in drawing.
5.2	Providing and fixing MS work in behind the ACP work in facade by welding etc complete and fixing to the wall, floor with necessary C.C., holdfast etc & making good the same as per details shown in drawing.
5.3	Providing & fixing Sign boards/ Signages including all steel work to support the signage if any as directed by CGEWHO/Architect.
	i) Backlit SS Signboard for Complex Name & address including Led light fittings etc complete with Alphabet height approx 650mm & 425MM high at Gate as per approval of CGEWHO.

S.No.	DESCRIPTION
6.0	FINISHING
6.1	Providing & applying Ready mix plaster with sand ready mix dry mortar in bags for plastering from the approved manufacturer in readymade PP bags of high quality laminated bags/Ad star bags. The specifications for cement used should be in line with IS 4031-1988 for physical tests and IS 1542-1977 & IS 2116-1980 accordingly. The power additives used should be of good quality make. The Ready Mix Mortars should comply to IS 2250-1981 with water to power ratio of 0.16-0.19 and having min 28 day pullout strength requirement of >0.3 MPa (as per ASTM D 7234-12) and 28 days compressive strength of > 5MPa (as per ASTM C 109-95). Also product should meet the VOC standards of <1% by Mass, including scaffolding, tool & plants etc Complete
a)	12 mm Ready Mix plaster on 230mm thick brick walls.
b)	15mm Ready Mix plaster on the rough side of single or half brick wall.
6.2	Waterproofing work complete as directed by CGEWHO/Architect.
6.3	Applying priming coat with ready mixed primer of approved brand & manufacturer on steel work.
6.4	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade with two or more coats on new work.
6.5	18 mm Ready Mix plaster in two coats under layer 12 mm thick Ready Mix plaster and a top layer 6 mm thick Ready Mix plaster mixed with approved water proofing compound 2% by weight of cement and finished smooth on the external surface of buildings for all heights and levels including forming grooves, scaffolding etc as per drawings.
6.6	Providing and fixing 150 mm wide chicken wire mesh of 22 gauge on the wall/column/beam junctions and over PVC conduit and GI/CPVC pipe with nails etc. complete.
6.7	Providing and applying Cement based putty in line and level over plastered surface to prepare the surface even and smooth complete and to the satisfaction of CGEWHO/Architect.
6.8	Wall painting with Premium acrylic emulsion paint of interior grade having VOC (Volatile Organic compound) content less than 50 grams /litre of approved brand and manufacture, including applying 2 or more coats where ever required to achieve even shade and colour. (as approved by CGEWHO/Architect) including one priming coat with primer of approved brand and manufacture, having low VOC content with water thinnable cement primer on wall surface having VOC content less than 50 grams/lite.
6.9	Finishing exterior walls with acrylic textured painting (exterior grade) applied @ 3.28 kg/10 sqm over and including priming coat applied @ 2.20 lt/10Sqm of approved make shade and colour on all heights and levels. The rate shall include all operations of work required for painting at all heights and as per specifications.
6.10	Providing and fixing Aluminium Composite Sheet Cladding using 4 mm thick sheet of approved make consisting of a core of 3mm natural polyethylene core sandwiched between two skins (0.5 mm each) of aluminium alloy with outer surface in all colour coating of PVDF paint in fully automatic coil coating process. The PVDF coated finished surface to be factory protected with self-adhesive peel off foil tested to withstand at least 6 months exposure to local weathering conditions. The composite sheet cut and bent to shaped profiles as required to, including perimeter extrusions base frame, extruded stiffeners, expansion fasteners & silicone sealant (Dow Corning 789) required for installation as per approved elevation drawing. Work includes necessary MS work in column, beams, truss, pergola etc as per drg and all accessories complete in all respects or equivalent as per direction of engineer -incharge.
6.11	Providing and fixing 20 mm thick Pre polished granite of approved quality on CLADDING with cement mortar 1:3 (1 cement : 3 coarse sand) with approved design and pattern, jointed with white cement slurry mixed with pigment to match the shade of the stone including necessary holdfasts, clamps and pins etc. as per requirement as per design and drawing of the Architects complete.

S.No.	DESCRIPTION
6.12	Providing and fixing High pressure laminate sheet Cladding using 4 mm thick sheet of approved make. The top coated finished surface to be factory protected with self-adhesive peel off foil tested to withstand exposure to local weathering conditions. The composite sheet cut and bent to shaped profiles as required to, including perimeter extrusions base frame, extruded stiffeners, expansion fasteners & silicone sealant (Dow Corning 789) or as required for installation as per approved elevation drawing. Work includes necessary accessories complete in all respects or equivalent as per direction of engineer -incharge.
7.0	ELECTRICALS
	Providing and fixing conduits in walls, wiring, modular switches, light fittings like ceiling fans, exhaust fans, LED light fittings, flood lights, MDB, DB, MCBs, telephone jack, CCTV, TV point etc complete as per the drawings and to make the guard room and gate functional
8.0	PLUMBING
	Providing and fixing water supply, drainage and sewer arrangements and connections including CPVC and uPVC pipe fittings, CP fittings, chinaware, water connection from the nearest block etc complete as per the drawings and to make the guard room and gate functional
9.0	WOOD WORK
9.1	Providing and fixing factory made door/window frames in Mango wood in Single rebate frames of doors and other frames of 100 mm x 65 mm size including 35x12mm wooden moulding of Mango wood all around the frame, one side flush with brick work/ column and fixed in position with M.S. hold fasts 40 x 5 mm and 300 mm long 3 nos. on each side or 100 mm long gun metal dash fastener in case of RCC column, including grooves and making arrangement as shown on drawing, applying anti-termite paint on surfaces touching masonry or concrete etc. complete
a	150 mm x 65 mm for external door frames
b	100 mm x 65 mm for internal door frames/Toilets
9.2	Providing and fixing 35 mm thick both side Teak vennered flush door shutter , decorative type, core of block board construction with frame of 1st class hard wood and well matched 3 mm thick teak ply on both faces of shutters using phenol formal-dehide synthetic resin (conforming to B.W.P. Type specified in IS:848 1974) including 6 mm thick external lipping of 2nd class teak wood glued & nailed all around complete painting with 2 or more coats with spray synthetic enamel paint over a coat of wood primer to give an even shade.
a	35 mm thick
9.3	Providing and fixing Stainless steel (304 grade) fitting of approved make with necessary screws etc. complete.
a)	Sliding aldrop
	250 x 16 mm or as required
b)	Tower Bolt
i)	250 x 10mm or as required
ii)	150 x 10mm or as required
c)	Handles
i)	125mm with plate 175 X32 mm
d)	Hanging floor door stopper 150 mm or as required
e)	40mm dia rubber buffer of required length with necessary stainless steel screws etc. complete
f)	Stainless steel butt hinges with necessary screws etc. complete
i)	125 x 70 x 4 mm hinges or as required
g)	Mortise lock
10.0	STEEL WORK
10.1	Structural steel work welded in built up Section trusses & frame work etc. for external façade and Main Gates or any other location as shown on drawing for all heights including cutting, hoisting, scaffolding, fixing in position and applying two or more coats of synthetic enamel paint over a priming coat of approved steel primer all complete as shown in drawings.
	M.S. tubes, plates, angles etc.

S.No.	DESCRIPTION
11.0	FLOORING
11.1	25mm thick Kota stone slab flooring & skirting over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab, including rubbing and polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand).
11.2	Providing and laying Anti skid ceramic glazed floor tiles 300 x 300 mm or more (thickness to be specified by the manufacturer) of 1st quality conforming to IS: 15622 of approved brand mentioned in schedule 'E' or equivalent make in all colours, shades except white, Ivory, Grey Fume Red Brown laid on 20 mm thick bed of Cement Mortar 1:4 (1 cement:4 coarse sand) including pointing the joints with white cement and matching pigments etc. complete. (Basic rate of ceramic tile will be Rs 300.00 per sqmtrs). Skirting shall be deemed to be included in same item.
11.3	Providing and fixing at all floors 1st quality Ceramic glazed tiles on walls conforming to IS: 15622 of 8 mm thickness of approved make in all colours, shades and of any size as approved by the CGEWHO/Architect in skirting, risers of steps and dados laid over 12 mm thick bed of Cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm including pointing the joints with white cement mixed with matching pigments and cleaning the surface complete in all respects. (Basic rate of ceramic tile will be Rs 300.00 per sqmtrs)
12.0	FINISHING
12.1	TERRACE ROOF TREATMENT
12.1.1	Providing and laying integral cement based water proofing treatment including preparation of surfaces as required for treatment of roofs and terraces consisting of the following operations:
a	Applying one coat of acrylic polymer modified cement slurry coating over the RCC surface and continued upto height of 250 mm from the roof slab. Laying fibre glass cloth over the applied surface when the coating is still green and there after applying one more coat of acrylic polymer modified cement brush topping over the fibre glass cloth.
b	Laying cement concrete using broken bricks bats 50 mm to 100mm size with 50% cement mortar 1:4 (1 cement : 4 coarse sand) admixed with approved water proofing compound over 20 mm thick layer of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with approved acrylic polymer based water proofing compound and top layer with 25 mm thick cement mortar 1:4 (1 cement:4 coarse sand) admixed with above water proofing compound to required slope and treating similarly the adjoining walls upto 300mm height including rounding of the junctions of wall and slabs.
c	After two days of proper curing a second coat of cement slurry admixed with approved water proofing compound shall be laid, finishing the surface with 20 mm thick joint less layer of cement mortar 1:5 (1 cement: 5 coarse sand) admixed with approved water proofing compound conforming to IS 2645 and finally finishing the surface with trowel with neat cement slurry and making of 300x300 square.
d	The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for the final test. All above operations to be done in order and as directed and specified by the CGEWHO/Architect
e	RCC surface to be cleared of all dirt, loose material and kept dry and holes/cracks to be repaired With average thickness of 120 mm and minimum thickness at shurra as 65 mm.
12.2	Grading Roof for water proofing treatment with Cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)
13.0	MISCELLANEOUS
a	Providing and fixing CC counters in guard rooms finished with 18 mm thick granite stone on counter top and below counter.
b	Providing and fixing of Ceramic tile Dado in toilets
c	Providing and fixing of SS letters as per drawing
d	Providing and fixing of Boom Barrier as per specifications and drawing complete.
i)	Boom barrier 640 std with loop upto 6 meter length
ii)	Push button
iii)	Pair of photocell
iv)	Boom rest

S.No.	DESCRIPTION
v)	RFID reader
vi)	Single door controller
vii)	MS pole for reader
viii)	Software for RFID solution
ix)	200 nos RFID Cards
x)	Providing and fixing of electrical connection from nearest common area DB for the operation of boom barriers including all materials required for smooth working
xi)	Installation, testing and commissioning of Boom barriers
	The scope of work includes all civil, Electrical, Sanitary, Landscape and miscellaneous items required to make the Guard room and main gate functional. The light fittings, fans, exhaust fans, and light fittings for signages is included in the scope of work. No extra payment for these shall be made.

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
FOR TENNIS CUM BASKETBALL COURT	
SCHEDULE D14	
SR. NO.	DESCRIPTION OF ITEM
TENNIS CUM BASKETBALL COURT	
1	Excavation in all kinds of soil excluding soft rock and hard rock for foundation of walls upto a depth of 300mm below ground level including well compacting.
2	Providing and laying in position 150 mm thick Soling with base preparation by mechanical compaction using 8 - 10 power Road Roller using Granite hand broken metal Rubble and smaller Pebbles for void filling after spreading murum sand upto 33 % by volume of soling metal and thoroughly watering etc for biding layer as directed by Engineer in charge including watering , packing , compaction etc. 80mm PCC 1:5:10 over WBM complete
3	Providing and laying 75 mm thick Plain Cement Concrete (M-25 Grade) to required line and level including hardner and neat cement finish with green colour mixed in cement .
4	Providing & fixing whire marble strip for permanent marking for Tennis/basket ball lines ie baseline/ sidelines/ centre line/ service line etc
5	Providing and fixing 1 set of necessary accessories with two poles & net for tennis and half basket ball backboard and basket etc complete
6	Providing and fixing 1 set of Flood Lights- 4 Poles with 2 Metal Halide lights 400W each
7	Providing and fixing railing, fencing, gate etc by welding etc complete and fixing to the wall, floor with excavation, necessary C.C., holdfast etc & making good the same as per details shown in drawing.
8	Providing and fixing G.I. chain link fabric fencing made of G.I. wire of dia. 4 mm, PVC coated to achieve in mesh size 50x50 mm including strengthening with 2 mm dia wire or nuts, bolts and washers as required complete as per the direction of Engineer-in-charge.


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CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
SEWAGE TREATMENT PLANT	
SCHEDULE D15	
S. NO.	Description
	The proposed Sewage treatment plant shall consist of the following facilities :
	All items of work under this Contract shall be executed strictly to fulfill the requirements laid down under "Basis of Design" in the specifications. Type of equipment, material specification, methods of installation and testing and type of control shall be in accordance with the specifications, approved shop drawings and the relevant Indian Standards, however capacity of each component and their quantities shall be such as to fulfill the above mentioned requirement.
	All tanks shall be in RCC, and shall be in scope of the Civil Contractor. Location, size and dimesional detail shall be provided by the specialised STP vendor through the main contractor in the shop drawing. Any changes in the size of tanks deemed to be included in the cost of STP. In any case capacity should not be reduced.
	All manhole covers shall be double seal medium duty CI alongwith frame and lockable arrangement and shall be in scope of civil contractor. Location of the same shall be provided by the STP vendor in the shop drawing.
	NOTE : THE TENDER FOR THIS WORK IS ON THE BASIS OF LUMP SUM TURNKEY BASIS. CONTRACTOR MUST INCLUDE ALL ITEMS THAT ARE NECESSARY AND ESSENNTIAL TO PROVIDE A COMPLETE WORKING PLAN TO THE SATISFACTION OF THE ARCHITECT/CGEWHO.
1.0	SEWAGE TREATMENT PLANT
A	Design, supplying, installing, testing & commissioning of MBBR based Sewage Treatment Plant of capacity 120 KLD (excluding excavation, back filling & disposal of surplus earth /Civil construction work) for the following duty:
	Nature of effluent - Domestic Sewage from toilets, bathroom,canteen kitchen waste water.
	Daily average flow - 120 Cum / Day
	pH - 6.5 – 8.5
	BOD5 - 250 – 350g/L
	S. Solids - 200 – 450 Mg/L
	COD - 450 – 600 Mg/L
	Oil & Grease - 50 Mg / L
	Sewage discharge standard after treatment
	pH - 6.0 – 8.5 Afetr UF < 6-8
	BOD5 - < 10 ppm Afetr UF <5
	S. Solids - < 30 ppm Afetr UF <5
	COD - < 50 ppm Afetr UF <30
	Oil & Grease - <5Mg/L Afetr UF < Nil
	Sewage treatment plant shall include the following Civil Unit /Tanks:
	Screen Chember /Grease Trap 2.5 KL
	Sewage equalization tank 40KL
	MBBR tank 12.5KL Each - 2 Nos.
	Tube Settler 12.5KL
	Sludge holding Tank 10 KL

S. NO.	Description
	Clear Water Tank 12KL
	Treated Water Tank 40KL
	Anoxic tank as required.
1.1	Supply, installation, testing & commissioning of Stainless Steel Perforated, Corrugated Bar Screen with suitable lifting arrangement as per site requirement(Manually Operated) Size:700mm X 800mm -2 Nos.
1.2	Supply, installation, testing & commissioning of level indicator and controller for automatic operation of the system with high/low level alarm with low level stop and high level start logic.
1.3	Contractor shall ensure submission of detailed GA drawings (Plan & Section), P & I diagram, schematic diagram for the above mentioned component and additional component if so required for the complete working of the STP and got it approved by the Owner's Architect / Project Manager / Consultants. Contractor shall also ensure approval of his design process from all concerned local authority
1.4	Supply, installation, testing & commissioning of non clogging type pumps complete with all accessories, motor of required capacity. Delivery header with isolation valve, level controller (with wiring) to control the level of sump automatically. Pumps shall have following duty:
1.4.1	Submersible Raw sewage Transfer Pumps (2Nos. -1 working & 1 standby)- 2 Nos. ,
	Flow rate (each) = 14m ³ /hr
	MOC : CI
	Head = 08-10 Mtr
	(pumps for transferring Sewage from equilisation tank. To MBBR Tank Solid Handling size 30-40mm)
1.4.2	Submersible Plant Room Sump Pump (2Nos. -1 working & 1 standby)-- 2 Nos. ,
	Flow rate (each) = 12m ³ /hr
	Head = 8-10 Mtr
	MOC : CI
	Solid Handling size 12- 20mm
1.4.3	Sludge Recirculation Pumps with CI body & CI impeller pump 1 working-- Total - 2 Nos.
	Capacity : 16m ³ /hr
	Head : 12 -15 M
	RPM : 2900
	(Solid handling size for above pumps shall be 7mm).
1.4.4	The pumps required for transfer the sewage from equilisation tank and treated/filtered/clear water tank in case of maintainance or bypass arrangement i/c electrical panels.
1.5	Supplying, installing, testing & commissioning of Horizontal centrifugal water pumps, CI Body & Impeller along with motor, pressure gauge with isolation cock, Isolation valve, NRV on delivery line. Isolation valve. Mechanical seal, suitable vibration elimination pads of approved design, drain pipe with valve for the pump. The pump shall be suitable for 415±10% volts 3 phase AC supply
1.5.1	Filter feed water pump-- 2 Nos.
	Capacity : 16 m ³ /hr
	Head :25-30M
	RPM : 2900
	No. of Pumps (1W+1S)
1.6	Air diffusion system shall include the following:
1.6.1	2 Nos. twin type rotary air blowers (One working & one standby) capable of delivering 250m ³ /hr of free air at 0.5 kg/cm ² driven through "V" belt or directly coupled through flexible coupling to a TEFC motor of suitable HP, Suitable for 415 ± 10% volts, 3 phase, 50 cycles A/C supply. - 2 Nos.

S. NO.	Description
1.6.2	Air piping shall comprise of pipes with MSEP Header complete with all fittings such as tees, crosses, plugs, sockets, elbows, reducers, supports & clamps, etc cutting chases & making good. Contactor to submit detailed P & I indicating their proposal- 1 Lot
1.6.3	Non clog type air retrieval diffusion(EPDM) system capable of handling 5-8 cfm of air with oxygen transfer efficiency of 3-4% per/meter water depth. Air dispersion grid shall be assembled in modular form so that they can be replaced / repaired easily from plat form at the top. (fine bubble epdm membrane diffusers) -1Lot
1.7	Providing and fixing all piping (as described below) and isolation control valves for making the system complete.
	SS 304 : Submerged air piping, Air Piping
	PVC :Pumped effluent & tank overflow pipe line
	MSEP : Interconnecting pipe line after delivery header of pump/ filter
	Designing, supplying, providing, fixing, testing and commissioning of STP as mentioned above.
1.8	Supplying, installing, testing and commissioning of MSEP vessel filter. Filter shall be suitable for working pressure of 5.0 kg / cm ² and shall include media, standard fittings like pressure gauges, sampling cock, rinse drain, vacuum breaker.
1.8.1	Multigrade pressure sand filter
	Flow rate : 8 m3/hr
	Filtration velocity : 14000 lit/hr/sqm
	Filter Diameter : 900mm
1.8.2	Activated Carbon Filter
	Flow rate : 8m3/hr
	Filtration velocity : 14000 lit/hr/sqm
	Filter Diameter : 900mm
1.9	Supply, installation, testing and commissioning of Advance MBBR Bio Chip Media. Having Sarface area 5500m2/m3 the media shall be enough for proper functioning of STP. Size: 30mm Dia & 1.1mm Thick MOC: PE vergin Material [MBBR System to be in Two reactors] - 1 Lot
1.10	Supplying & Fixing PVC Tube deck media in tube settler 1Lot
1.11	Supplying, installing, testing and commissioning of Filters press 18"X18" 18 no. plate with supply of new screw pump(1W+1S) with all fittings & accessories .Semi automatic Manual operated - 1Set
1.12	Supplying & fixing of electromagnetic flow meter cum Totalizar
1.13	Supply, installation, testing & commissioning of UV system for purification of recycled water from STP. With all accessories complete in all respect. Capacity 8m3/hr -1Set
1.14	Supply, installation, testing & commissioning of 0-6LPH Dosing Pump along With 100 Ltr Tank of HDPE - 1Set
B	UF PLANT
1	Supplying of Horizontal centrifugal Water Pumps, CI Casing, & Impeller along with motor, pressure gauge with isolation cock, Isolation valve, NRV on delivery line. Isolation valve, Mechanical seal, sdrain pipe with valve for the pump. The pump shall be suitable for 415±10% volts 3 phase AC supply
1.1	Ultra-filtration Feed Pumps-- 2 Nos.
	Capacity : 16.m3/hr
	Head :20-25M
	RPM : 2900

S. NO.	Description
	No. of Pumps (1W+1S)
	Ultra-filtration Back wash Pumps
	Capacity : 24m ³ /hr
1.2	Head :20-25M
	RPM : 2900
	No. of Pumps (1W+1S)
2.0	Supplying, installing, testing & commissioning of Micron Cartridge Filter Unit with PP Housing
	Size : 20 micron
	Capacity : 16m ³ /hr
3.0	Supplying, installing, testing & commissioning of Ultrafiltration Unit with MSEP Skid Membrane are made from a PES material with Excellent low Fouling Characteristics.
	Capacity : 16m ³ /hr
	Membrane Type : Hollow Fiber
	Nominal Membrane Pore Size : 0.02micron
	No. of Membrane : as per requirement
	Skid : 1no. MSEP
	Membrane Make:Deerfos/GE/Toray
4.0	Supplying, installing, testing & commissioning of Chemical Cleaning System with piping and Tank
	0-40 LPH
	Capacity Tank : 100 Ltr
	Make: Seko/Asia LMI/E-dose
5.0	Supplying, installing, testing & commissioning of Rota Meter
6.0	Supplying, installing, testing & commissioning of Solenoid Valve/Butterfly Valve for automatic Operation 3 nos each
	Size : 1.5 "
	Size : 2 "
7.0	Providing, fixing, testing and commissioning of three phase, 50 HZ, AC, PLC based, vertical inline multi stage variable cum fixed speed hydropneumatic pumping sets , in SS MOC (Impeller - SS 304, Shaft - 316), housing in cast iron, enclosure class IP 55, Insulation F class, electrical control panel with contactors, relays, circuit breakers, starters, branch ammeters, incoming voltmeter, selector switches, equal load sharing, low level guard and other protection as per manufacturers specifications complete with common base frame, pressure gauge on the delivery side including non-return valve, isolating valves on suction and delivering sides, suction and delivery headers, pressure tanks bladder/diaphragm type with pre-pressurized air, complete in all respects. The booster pumps shall consists of 3 nos. hydropneumatic pumps (1 variable speed and 2 fixed types in configuration of 2 pumps working and 1 pump stand by). The Complete pumping system and panel shall be assembled and tested at the pump manufacturer factory. Systems assembled by the dealers locally will not be accepted.
a)	Discharge : 250 lpm (each) at 90 meter head(1W+1S), 2900 rpm, 415 volts, 50 HZ, 2 x 100 liters pressure tanks for Recycle.-2 sets (In parallel) One set shall run at a time and automatically switchover to another set after a fixed period of time)
b)	Discharge : 100 lpm (each) at 30 meter head(1W+1S), 2900 rpm, 415 volts, 50 HZ, for garden hydrants
8.0	Design, fabrication, assembling, wiring, supply, installation, testing and commissioning of PLC based motor control centre shall be fabricated with reinforcement of suitable size angle iron, channel 'T' sections irons and/or flats wherever necessary. Cable gland plates shall be provided on top as well as at the bottom of the panels. Panels shall be treated with all anticorrosive process before painting as per specifications with 2 coats of red oxide primer and final approved shade of powder coated paint. Marge in STP Panel

S. NO.	Description
9.0	Supplying, installing, testing & commissioning of Cables , Conector, to make Electrical Installation Complete.
C	PIPING:
1.1	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc.
1.1.1	32mm dia nominal bore
1.1.2	40mm dia nominal bore
1.1.3	50mm dia nominal bore
1.1.4	65mm dia nominal bore
1.1.5	80mm dia nominal bore
1.2	Providing, fixing and testing in position ISI marked (IS : 1239 for upto 150 mm dia and IS : 3589 for 200 mm and above dia) G.I pipes (medium class) in concealed or exposed works complete with all necessary G.I fittings i.e. sockets, elbows, tees, bends, unions, plugs and clamps including cutting chases and making good the walls (on terrace the pipes shall be supported at suitable interval and inside ducts these shall be properly clamped through duct walls). The Galvanization shall conform to IS : 4736. The work shall include the painting with two coats of anti-corrosive paints on buried and concealed pipe works and with two coats enamel paint of approved quality and shade over a coat of primer on exposed pipe works including bellows / expansion joint wherever pipe crosses exp joint, complete as required by the Engg-in-charge for proper completion of the work.
1.2.1	100 mm ID
1.3	Supply & fixing in position ISI marked cast iron double flanged butterfly valves (PN 1 MPa) as per IS:13095, with SS disc, shaft, seating rings, internal fastening, nitrile rubber lining, nuts, bolts including transporting to worksite, 3 mm thick rubber gaskets etc. including testing, Complete as per drawings & directions of the Engineer-in-charge.
1.3.1	65 mm nominal dia
1.3.2	80 mm nominal dia
1.3.3	100 mm nominal dia
1.4	Supply, installing, testing and commissioning of non clog submersible type drainage / dewatering pump suitable for automatic operation, float valve operated, automatic / manual operation, including NRV & all accessories, nlet & outlet arrangements, required cable etc. complete in all respects.
	2 lps at 10 meter, 10 mm max particle size, 50 Hz, 240 volts, IP 68, F insulation, Float level switches, impeller in CI / Polypropylene, casing in CI / polyurethan and shaft in stainless steel (1 set comprises of two number dewatering pumps - for pump house drainage)
1.4.1	Pump Set
1.5	Supply, installing, testing and commissioning of non clog submersible type sewage effluent pumps suitable for automatic operation, float valve operated, automatic / manual operation, including all accessories, starters, electrical control & protections, inlet & outlet arrangements, required cable etc. complete in all respects. The Float valve are to be installed in such a way that the second pump will also start after the water reaches a predefined level in the sump.
	2 lps at 7.5 meter, 50 mm max particle size, 1300 watt, 50 Hz, 240 volts, IP 68, F class insulation, Float level switches, stainless steel construction-SS 304 (Grundfos : AP 50.50.08.A1)
1.5.1	Pump Set
D	STP ELECTRICAL PANEL
1.1	Design, fabrication, assembling, wiring, supply, installation, testing and commissioning of motor control centre fully compartmentalised fabricated out of 14 gauge CRCA sheet steel. Cable gland plates shall be provided on top as well as at the bottom of the panels. Panels shall be treated with all anticorrosive process before painting as per specifications with 2 coats of red oxide primer and final approved shade of powder coated paint. 2 Nos. earthing terminals shall be provided for 3 phase, 4 wire, 50 Hz supply system. Lifting hooks shall also be provided in case of large panels. Approval shall be taken for each panel before fabrication. Quoted rates shall be inclusive of cables (in accordance to specification) with earthing from panel to each motor / equipment.
	Motor Control Centre
	Incoming

S. NO.	Description
	125 amps TPN MCCB with the following accessories:
	b. 0-200 amps 96 x 96 mm square electronic ammeter with selector switch and 125./5 amps 10 VA CL:1 CTs. 1 Set
	c. Phase indicating lamps shall be protected by 2 amp SP MCB 3 Sets
	Bus Bar
	200 amps TPN (15 KA) copper bus bar with heat shrinkable insulation sleeves.
	a. Required Nos of required capacity TPN MCB for direct on line starter/star delta starters and out going feeders to all the pumps/blowers etc. (including standbys). Each compartment shall contain auto / manual selector switch and indicating lamp with MCB's for 'ON/OFF/TRIP' status of motor
	b. Spare MCB's of following capacities:
	i. 32 amps TPN MCB's 4 Nos.
	c. Necessary cable alleys, internal / cabling, wiring, cabling from MCC to various pumps / equipment and interlocking, earthing for all equipment shall also included
	a. All MCCBs / MCBs shall be of 15 KA breaking capacity and suitable for motor duty application.
	b. All motor starters shall be provided with Automatic level controller
Notes :	c. DOL starters shall be used for mototrs below 10HP and Star-Delta Starters for other motors .
	d. Provision shall be made for providing potential free contacts to all pumps starters
	MCC for all STP equipments/pumps as described in sub head II
	e. All MPCB, Contactor,Overload Relay Shall be L&T & ABB
1.2	Supplying, installing, testing & commissioning of Cables , Conector, Cable Trays, to make Electrical Installation Complete.
	a) Cable
	Type - Armoured 3 core
	Capacity - As per the control panel and machines to connected.
	Size of cable - 3core x 1-4 sqmm or as required.
	b) Cable Tray
	Qty - As required
	Type - Slotted GI
	Size - 2" x 4" x 6" or as required.
	c) Cable Tray Support
	Quantity - As per site requirment of approved quality.
1.3	Any other thing required for installation, testing & commissioning shall deemed to be included in the scope of work.

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
UNDER GROUND WATER TANK & WTP	
SCHEDULE D16	
S. NO.	Description
	UNDER GROUND WATER TANK:
A	PUMPS, PANELS AND RELATED PIPES & ACCESSORIES
1	Providing, fixing, jointing and testing in position ISI marked (IS : 1239) G.I pipes (Heavy class-C)
a)	65mm nominal bore (wall thickness - 4.8 mm)
b)	80mm nominal bore (wall thickness - 4.8 mm)
c)	100mm nominal bore (wall thickness - 4.8 mm)
d)	150mm nominal bore (wall thickness - 4.8 mm)
2	Providing and fixing in position G.I. pipe one side flanged sleeves of suitable long (heavy class) with M.S. puddle flange fabricated out of 6 mm thick MS plate in RCC walls of water tanks / retaining walls during the time of casting the same including hot dipped galvanization after fabrication and painting with two coats of anti corrosive paint over primer.
a)	80 NB (IS 1239 - C Class)
b)	100 NB (IS 1239 - C Class)
c)	150 NB (IS 1239 - C Class)
d)	200 NB (219.1 OD) (IS: 3589, 6.3 mm thick)
3	Providing and fixing in position G.I. pipe both side flanged sleeves of suitable long (heavy class) with M.S. puddle flange fabricated out of 6 mm thick MS plate in RCC walls of water tanks / retaining walls during the time of casting the same including hot dipped galvanization after fabrication and painting with two coats of anti corrosive paint over primer.
a)	80 NB (IS 1239 - C Class)
b)	100 NB (IS 1239 - C Class)
c)	150 NB (IS 1239 - C Class)
4	Providing and fixing in position G.I. pipe one side screwed sleeves of suitable long (heavy class) with M.S. puddle flange fabricated out of 6 mm thick MS plate in RCC walls of water tanks / retaining walls during the time of casting the same including hot dipped galvanization after fabrication and painting with two coats of anti corrosive paint over primer.
a)	80 NB (IS 1239 - C Class)
5	Supply & fixing in position ISI marked cast iron double flanged butterfly valves (PN 16) as per IS:13095, with SS disc, shaft, seating rings, internal fastening, nuts, bolts including transporting to worksite, 3 mm thick rubber gaskets etc. including testing, Complete as per drawings & directions of the Engineer-in-charge.
a)	80 mm nominal dia
b)	100 mm nominal dia
6	Providing & fixing cast iron body strainer made up of SS screen tested to a min. pressure of 15 kg/sqcm complete with flanged ends as required.
a)	80 mm nominal bore
b)	100 mm nominal bore
7	Providing, fixing, testing and commissioning of motorized butterfly valve of following dia for filling of domestic and recycle Over Head Water tank complete with high and low level control switches to control the valve. The level controllers shall be installed in overhead tanks. The level switch will close the valve when water level is high in over head tank and open the valve when over head water tank level is low. The system should be complete in all respects with accessories, 220 V AC / 24 V DC, IP67 electrical water level control unit, copper control wiring in whether proof casing etc.
a)	20 mm dia
b)	25 mm dia
c)	32 mm dia

S. NO.	Description
d) 40 mm dia	
8	Supply, installing, testing and commissioning of non clog submersible type drainage / dewatering pump suitable for automatic operation, float valve operated, automatic / manual operation, including NRV & all accessories, inlet & outlet arrangements, required cable etc. complete in all respects.
	3 lps at 10 meter, 10 mm max particle size, 50 Hz, 240 volts, IP 68, F insulation, Float level switches, impeller in CI / Polypropylene, casing in CI / polyurethan and shaft in stainless steel (1 set comprises of two number dewatering pumps - for pump house drainage)
9	Providing, fixing, testing and commissioning of three phase, 50 HZ, AC, PLC based, vertical inline multi stage variable cum fixed speed hydropneumatic pumping sets , in SS MOC (Impeller - SS 304, Shaft - 316), housing in cast iron, enclosure class IP 55, Insulation F class, electrical control panel with contactors, relays, circuit breakers, starters, branch ammeters, incoming voltmeter, selector switches, equal load sharing, low level guard and other protection as per manufacturers specifications complete with common base frame, pressure gauge on the delivery side including non-return valve, isolating valves on suction and delivering sides, suction and delivery headers, pressure tanks bladder/diaphragm type with pre-pressurized air, complete in all respects. The booster pumps shall consist of 3 nos. hydropneumatic pumps (1 variable speed and 2 fixed types in configuration of 2 pumps working and 1 pump stand by). The Complete pumping system and panel shall be assembled and tested at the pump manufacturer factory. Systems assembled by the dealers locally will not be accepted.
a)	Discharge : 600 lpm (each) at 90 meter head(1W+1S), 2900 rpm, 415 volts, 50 HZ, 2 x 100 liters pressure tanks for Domestic.-2SETS (in parallel) One set shall run at a time and automatically switchover to another set after a fixed period of time)
10	Providing, fixing, testing and commissioning of electrical control panel for water supply pumps / equipments with magnetic type level controllers and digital type level indicators. The panel will be suitable for automatic start-stop arrangement of water supply pumps and other equipments as required. The panel will have necessary indication & protection, Star delta starters for above 5 HP pumps & DOL Starters for upto 5 HP pumps, digital ammeter & voltmeter with selector switches on incomer and ammeter with selector switch on all outgoing feeders, phase indicating lights, pump ON / OFF lights, power ON / OFF lights, switches for auto-manual operation of pumps, cyclic convertor for alternate running of working and stand by pumps, overload relays, single phasing preventor, dry suction cut off, necessary contactors inclusive of SS level sensing probes to be installed in water reservoirs for the proper completion of the system.
	The system will include Digital type multi level indicator display system of water levels for 3 nos water tanks / compartments.
	The control panel will be floor / wall mounted type fabricated out of 14 SWG CRCA MS sheet, IP 54 enclosure, duly powder coated of min. 60 micron thickness of standard seimens grey shade over primer coats with 7 tank treatment for degreasing, derusting, phosphatising & passivation complete. The panel will be compartmentalized with front operation having Separate bus bar and cable alley chamber, ventilation louvers, 415 V electrolytic Aluminium Bus Bar, removable gland plates, cable glands, including connection with outgoing feeders complete in all respect.
	The MCCB shall be Ics = 100% Icu, with rotary handle & pad locking arrangement, with trip setting as per load requirement. TP MCCB shall be with solid isolable neutral link. The breaking capacity specified is Ics value. The MCCB shall be of thermo magnetic type. All outgoing MCB's shall be C type with 10 KA breaking capacity.
	The system is inclusive of suitable PVC insulated armoured multi core copper control cable FRLS grade of required length with supporting arrangements for the proper completion of the system.
	The suitable size PVC / XLPE insulated armoured aluminium conductor power cable from control panel to pumps will be included in above item along with terminations, cable glands & cable trays etc as required.
	The following pumps shall be controlled by the panel :
	(a) One set of Hydropneumatic water transfer pump set control panel. (The control panel of hydropneumatic pumps will be supplied by the pump manufacturer) (To cut off pump when water level is low in suction tank)
	(b) Two sets of tubewell submersible pumps (To cut off pump when water level is high in delivery tank and start when delivery water tank level is low)

S. NO.	Description
	(c) One set of filter feed pump of water treatment unit. (To cut off pump when water level is high in delivery tank and start when delivery water tank level is low)
	(d) 1 nos. Dewatering Pump Control unit for two nos. single phase pumps, to operate Pumps alternatively and in case of Excess inflow into the Sump, Both Pumps Will Start Automatically With Audio, Visual & Alarm Including All Standard Accessories Like Ammeter, Auto Manual switch, DOL Starter, Indicating Lights, And Pumps On/ Off Lights, Protection MCB, Etc.
	e) The additional item which is not mentioned above and is required as per vendor shall demed to be included in the quoted rates.
	INCOMER : 200 AMP FP MCCB (35 KA)
	BUS BAR : 300 AMP, 500 Volts, 3 phase 50 HZ TPN high conductivity electrolytic Aluminium bus bar of suitable length, insulated by heat shrinkable sleeves. The current density of bus bar shall be minimum 1.00 sq mm / amp.
	OUT GOINGS :
	a) 1 no 63 AMP TP MCB (10KA) - for hydropneumatic pump set panel
	b) 2 no 25 AMP TP MCB (10KA) - for filter feed pumps
	c) 2 no 32 AMP TP MCB (10KA) - for tubewell pump
	d) 1 no 20 AMP DP MCB (10KA) - for dewatering pumps control unit
	e) 1 no 25 AMP TP MCB (10KA) - for spare
	f) 1 no 32 AMP TP MCB (10KA) - for spare
	g) 1 no 63 AMP TP MCB (10KA) - for spare
	h) 8 no 6 / 10 / 16 Amp DP MCB (10KA) - for Light / fan / spares
B	WATER FILTRATION PLANT
	Supplying, installing, testing & commissioning of water filtration plant (for 160 KL per Day) comprising of the following including all necessary inter connecting piping, control valves, electrical cables, control cables, other accessories etc. as directed and required at site to complete the work.
1	FILTER FEED PUMPS
	Providing, fixing, testing and commissioning of single stage, horizontal, centrifugal, 2 pole, 50 HZ, AC, monoblock pumps (as per IS : 9079) incorporating C.I. casing and frame, stainless steel shaft, bronze impeller, TEFC induction motor directly coupled to the pump, IP44 protection, class B insulated, C.I. body, hydraulically and dynamically balanced to give vibration free operation, with mechanical seal arrangement, fixed on a base plate with suitable vibration eliminator pads complete with PCC foundation, bolts grouted in CC blocks of 1:2:4, suitably rated DOL / star-delta starter fixed inside main electrical panel complete with level controller, necessary wiring, pressure gauge on the delivery side and strainer on suction side, including non-return valve and isolating valves on suction and delivering sides as required, including suction and delivery headers complete in all respects.
	(i) Filter Feed Pumps - 2 nos (1W+1S), having discharge : 20,000 lit/hr (each) at 30 meter head
2	MULTI GRADE FILTER - 1 nos.
	Supply, installation & testing and commissioning of vertical floor mounted mild steel pressure type Multi Grade filter of suitable size, provided with an inlet distributor. The vessel is painted externally with epoxy paint with primer and internally with 2 mm thick FRP lining with frontal piping & valves, back wash system & filter media etc. complete with standard fittings like manhole cover, pressure gauge at inlet & outlet, sampling cock, rinse drain valve, air vent valve with piping, bolts, nuts & rubber gaskets.
	Flow rate = 20000 Lit/hr at 10 hrs operation
	Vessel Dia = 1300 mm
	Filtration rate = 16 M ³ /M ² /Hr
	Shell/ Dish thickness = 6 / 8 mm
	Working pressure = 3.5 Kg/Sq.cm.
3	ACTIVATED CARBON FILTER - 1 nos.

S. NO.	Description
	Supply, installation & testing and commissioning of vertical floor mounted mild steel pressure type Activated Carbon filter of suitable size, provided with an inlet distributor. The vessel is painted externally with epoxy paint with primer and internally with 2 mm thick FRP lining with frontal piping & valves, back wash system & activated carbon media etc. complete with standard fittings like manhole cover, pressure gauge at inlet & outlet, sampling cock, rinse drain valve, air vent valve with piping, bolts, nuts & rubber gaskets. Flow rate = 20000 Lit/hr at 10 hrs operation Vessel Dia = 1300 mm Filtration rate = 15 M ³ /M ² /Hr Shell/ Dish thickness = 6 / 8 mm Working pressure = 3.5 Kg/Sq.cm.
4	Providing and fixing all piping (GI Piping -Class C) and isolation control Ball / butterfly valves of required sizes and numbers with all accessories, fittings, supports, clamps, double flanged flexicon rubber expansion joint with rubber gasket as per system pressure, nuts, bolts, washers, puddle flanges for all tanks, other flanges, NRV's, flow control valves, flow measurement device, SS 304 screen strainers at suction of clear water pumps, level sensors for automatic operation of all kind of pumps with necessary control wiring upto the control panel, for making the system complete in all respects with anti corrosive protection. Battery Limit for WTP Piping is from Filter Feed Pump Suction including Butterfly Valve & Strainer at main suction line till outlet pipe into under ground tank from Filter header.
5	Contractor shall include all electrical and mechanical items as required to operate the system automatically/ manually and also include in his rates all water level controller for automatic operation of pumps, electrical wiring, armoured aluminium power cables and copper control cables between panel to various pumps & equipments, cable terminations, double compression glands, GI perforated cable trays to carry cables from panel to various equipments including supports, with all accessories complete as required. Only main power supply upto the WTP panel shall be provided by the owner.
6	The Contractor shall have to submit detailed GA drawings, P & I diagram, schematic diagram and shop drawings of the water treatment plant indicating all component, piping, valves etc for the complete working of the WTP.
7	The entire installation shall be complete in all respects including all interconnecting pipe line, control valves, pressure gauge, meters, etc at suitable places including electrical control panel for pumps and plant. The system should be complete in all respects.

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
MECHANICAL VENTILATION	
SCHEDULE D17	
Sl. No.	DESCRIPTION
	SUB-HEAD 'A' - VENTILATION
	Note: The contractor is required to check the scheme/ drgs as per the requirement of Fire authorities. Nothing extra shall be paid if there is an increase in scope of work as per requirement of Fire Authority.
1.0	AXIAL FLOW FAN
	<p>Supply, Installation, Shifting, Loading, Unloading, Testing & Commissioning of Ceiling/ Floor Mounted Axial flow type supply air fans complete with MS/GSS long casing (Motor should be totally accomodated inside the casing),aluminium alloy blades with aerofoil design with adjustable pitch blade & angle, bird screen, double fire retardant flexible connectionson both side (Fire rated & water proof shall be made of Silicon coated glass fabric having 250 degree / 2 hour fire rating) . Motor shall be suitable with VFD(or as mentioned below) compatible , Motor shall be of $415 \pm 10\%$ volts, 50 Hz with Class F insulation conforming to efficiency grade IE3 for Supply and Supply with outlet velocity of upto16 m/s and high temperature resistance confirming to BSEN-12101-3; 2015. Sound level at 3mt distance from fan outlet shall not be more than 80 dBA at 50 Hz at room conditions .Capacity shall be as follows & as per detailed technical specification complete with spring type anti vibration isolators ,fan mounting arrangement,total fan Efficiency should not be less than 65 %. Fans shall be AMCA certified for sound and air for selected pitch.</p> <p>Vendor to reconfirm the Fan Motor HP as per manufaturer recommendation.</p> <p>Cost of Supporting arrangement as per approved shop drawing/ best indsustrial practice should be included in the above cost of equipment installation.</p> <p>All Equipment installation should be minimum as per NBC -2016 (Part 8 Section 3 standard).</p>
	Lower Basement
	Air Qty = 29000 Cfm (Fresh Air For Basement Parking Area)
	Static Pressure = 25mm
	Fan Speed = Not Exceed 2800 Rpm
	Motor rating = 11 Kw
	Fan Dia = 1200 \varnothing
	Flow Direction = Impeller To motor
	Air Qty = 2700 Cfm (Fresh Air For Pump Room)
	Static Pressure = 25mm

	Fan Speed	=	Not Exceed 2800 Rpm
	Motor rating	=	2.2 Kw
	Fan Dia	=	600 Ø
	Flow Direction	=	Impeller To motor
	Upper Basement		
	Air Qty	=	14500 Cfm (Fresh Air For Basement Parking Area)
	Static Pressure	=	25mm
	Fan Speed	=	Not Exceed 2800 Rpm
	Motor rating	=	5.5 Kw
	Fan Dia	=	1200 Ø
	Flow Direction	=	Impeller To motor
	Air Qty	=	14500 Cfm (Fresh Air For Staircase Press.)
	Static Pressure	=	25mm
	Fan Speed	=	Not Exceed 2800 Rpm
	Motor rating	=	5.5 Kw
	Fan Dia	=	1200 Ø
	Flow Direction	=	Impeller To motor
	Air Qty	=	14000 Cfm (Fresh Air For STP)
	Static Pressure	=	25mm
	Fan Speed	=	Not Exceed 2800 Rpm
	Motor rating	=	5.5 Kw
	Fan Dia	=	1200 Ø
	Flow Direction	=	Impeller To motor
	Air Qty	=	13500 Cfm (Fresh Air For Lift Well Press.)
	Static Pressure	=	25mm
	Fan Speed	=	Not Exceed 2800 Rpm
	Motor rating	=	5.5 Kw
	Fan Dia	=	1200 Ø
	Flow Direction	=	Impeller To motor
	First Floor		
	Air Qty	=	4500 Cfm (Fresh Air For Double Height Lobby)
	Static Pressure	=	25mm
	Fan Speed	=	Not Exceed 2800 Rpm
	Motor rating	=	3.7 Kw
	Fan Dia	=	600 Ø
	Flow Direction	=	Impeller To motor
	Makes:- Raviar / Balance Air / Fanair		

2	AXIAL FLOW FANS Additional Supply Vane / Tube Axial Fans :-
	<p>Supply, Installation, Shifting, Loading, Unloading, Testing & Commissioning of Ceiling/ Floor Mounted Axial flow type exhaust fans complete with MS/GSS long casing (Motor should be totally accommodated inside the casing), aluminium alloy blades with aerofoil design with adjustable pitch blade & angle, bird screen, Double fire retardant flexible connections on both side (Fire rated & water proof shall be made of Silicon coated glass fabric having 250 degree / 2 hour fire rating). The complete fan assembly along with motor should be CE Certified/EN Certified in accordance with BS EN120101-3:2015 by a notified laboratory. The complete fan shall be able to operate at min. 250 Deg C for 2 Hours temp rating. The Type test report is to be submitted by fan manufacturer & same clearly indicate the make of motor used during the testing and the same make/model of motor should be supplied by the fan manufacture at the site. Motor shall be Suitable with VFD(or as mentioned below) , Motor shall be of 415 ± 10% volts, 50 Hz with Class H insulation conforming to efficiency grade IE3 for Exhaust with outlet velocity of upto 16 m/s and high temperature resistance confirming to BSEN-12101-3; 2015. Sound level at 3mt distance from fan outlet shall not be more than 80 dBA at 50 Hz, at room conditions . Capacity shall be as follows & as per detailed technical specifications complete with spring type anti vibration isolators, fan mounting arrangement, total fan Efficiency should not be less than 65 %. Fans shall be AMCA certified for sound and air for selected pitch.</p> <p>All Equipment installation should be minimum as per NBC -2016(Part 8 Section 3 standard). Vendor to reconfirm the Fan Motor HP as per manufacturer recommendation.</p> <p>Cost of Supporting arrangement as per approved shop drawing/ best industrial practice should be included in the above cost of equipment installation.</p>
	Lower Basement
	Air Qty = 29000 Cfm (Exhaust Air For Basement Parking Area)
	Static Pressure = 25mm
	Fan Speed = Not Exceed 2800 Rpm
	Motor rating = 11 Kw
	Fan Dia = 1200 Ø
	Flow Direction = Impeller To motor
	Air Qty = 2700 Cfm (Exhaust Air For Pump Room)
	Static Pressure = 25mm
	Fan Speed = Not Exceed 2800 Rpm
	Motor rating = 2.2 Kw
	Fan Dia = 600 Ø
	Flow Direction = Impeller To motor
	Upper Basement
	Air Qty = 29000 Cfm (Exhaust Air For Basement Parking Area)
	Static Pressure = 25mm
	Fan Speed = Not Exceed 2800 Rpm

	Motor rating	=	11 Kw
	Fan Dia	=	1200 Ø
	Flow Direction	=	Impeller To motor
	Air Qty	=	16500 Cfm (Exhaust Air For STP)
	Static Pressure	=	25mm
	Fan Speed	=	Not Exceed 2800 Rpm
	Motor rating	=	5.5 Kw
	Fan Dia	=	1200 Ø
	Flow Direction	=	Impeller To motor
	First Floor		
	Air Qty	=	4500 Cfm (Exhaust Air For Double Height Lobby)
	Static Pressure	=	25mm
	Fan Speed	=	Not Exceed 2800 Rpm
	Motor rating	=	3.7 Kw
	Fan Dia	=	600 Ø
	Flow Direction	=	Impeller To motor
3	Supply, installation, testing and commissioning of direct driven PROPELLER FANS for exhaust / supply air as shown in drawings. Each fan shall be complete with permanent split capacitor or shaded pole motor, mounting plate, accessories like wire guard, bird screen and fixed louvers for weather protection as required. Fan selection arrangement and Electrical characteristics shall be as follows :		
	600 mm dia 1300 RPM fan suitable for 220±6% volts 50 cycles, 1 phase AC supply.		
	Makes:- Raviar / Balance Air / Fanair		
	SUB-HEAD 'B' - AIR DISTRIBUTION		
	AIR DISTRIBUTION WORK FOR VENTILATION SYSTEM		
2.0	Supply, installation, and commissioning of Factory Fabricated GSS sheet metal rectangular/round ducting complete with neoprene rubber gaskets, elbows, hangers, supports etc. as per approved drawings and specifications of following sheet thickness complete as required.		
a)	Thickness 0.63 mm sheet (24 G)		
b)	Thickness 0.80 mm sheet (22 G)		
c)	Thickness 1.00 mm sheet (20 G)		
d)	Thickness 1.25 mm sheet (18 G)		
2.1	Supply, installation, and commissioning of Site Fabricated GSS sheet metal rectangular/round ducting complete with neoprene rubber gaskets, elbows, hangers, supports etc. as per approved drawings and specifications of following sheet thickness complete as required.		
a)	Thickness 0.63 mm sheet (24 G)		
b)	Thickness 0.80 mm sheet (22 G)		
c)	Thickness 1.00 mm sheet (20 G)		

d)	Thickness 1.25 mm sheet (18 G)
5.2	Supplying, fixing, testing commissioning of GI volume control Duct damper complete with neoprene rubber gaskets, nuts, bolts, screws linkages, flanges etc, in accordance with approved shop drawings and specifications complete as required.
2.2	Supplying & fixing of powder coated extruded aluminium Supply/Return Air Grills with aluminium volume control dampers as per specifications.
2.3	Supplying, fixing testing commissioning of powder coated aluminium Fresh/Exhaust air louvers With Damper and Bird screen.
2.4	Supplying, fabricating, installing and testing of fire retardent double Canvas Flexible Connection wide for constructed of standard material as per the drawings/specifications.
	SUB-HEAD 'C' - ELECTRICAL WORKS
3.0	ELECTRICAL WORKS
	Design, fabrication, supply, installation, testing and commissioning of panels fabricated out of 2mm thick for structural members and 1.6mm thick for door and covers CRCA sheet in cubicle compartmentalize free standing floor mounted/ wall mounted powder coated with reinforcement wherever necessary. Cable gland plates shall be provided on top and bottom. Panels have 2 Nos. earthing terminals. Panels shall be suitable for 415V, 3-phase, 4-wire, 50Hz supply system lifting hooks shall also be provided in case of large panels. Degree of ingress protection shall be IP42.
1.1	Axial Flow Fan Starter Panel
	Incomer (1 No.):
	63A, TPN MCCB (10 KA) with adjustable O/L fix short circuit
	Metering:
	0-500 Volts, digital Voltmeter with S/S and shall be protected by 2 Amps MCBs.
	0-63 Amps digital Ammeter and 63/5A, 10VA, CL-1 CTs and selector switch.
	Phase indicating lamps and shall be protected by 2 Amps MCBs.
	Bus Bars:
	100Amps TPN Aluminium busbars, colour coded with heat shrinkable insulation sleeves,
	Outgoing:
	12 Nos.11 KW as per Axial Fan (In Case of fire Mode)
	19 Nos.5.5 KW as per Axial Fan (In Case of fire Mode)
	4 Nos.3.7 KW as per Axial Fan (In Case of fire Mode)
	2 Nos.2.2 KW as per Axial Fan (In Case of fire Mode)
	Toggle Switch 2No+230V Ac power socket
4.0	Supplying & laying of following 1100 volt grade XLPE insulated PVC sheathed Copper conductor armoured cables including , clamped includes anchor fastners wall with suitable clamps, saddles fixing bolts including connecting testing and commissioning etc as per specification complete as required.
a)	4C x 10 Sq.mm.

5.0	Supply and erection of hot dip G.I. cable tray perforation not more than 17.5% for specific dimensions along with tees, bends. The cable tray shall be hang from ceiling/ fixed to wall with necessary angle/flat iron / hanging rod, for ceiling suspensions, clamps, anchor fastner, nuts, bolts, washers, not mor than 1.5 mtr. apart complete as per specification to complete the job. The tray shall be as follows :-
a)	100 x 50 mm x 1.6mm thick
6.0	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.
a)	25 mm dia. ISI marked, steel conduit
7.0	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.
a)	25 mm dia. ISI marked, PVC conduit
8.0	WIRING IN EXISTING CONDUIT / PVC CASING CAPPING WITH COPPER CONDUCTOR
	Supplying and drawing following sizes of FRLS PVC insulated copper conductor, single core cable in the existing surface/ recessed steel/ PVC conduit as required.
a)	2x 1.5Sq mm
9.0	EARTHING SYSTEM
b)	Providing and laying earth connection from earth electrode with 6 SWG dia G.I Wire in 15 mm dia G.I pipe from earth electrode including connection with G.I thimble excavation and re-filling as required.

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
DIGITAL ADDRESSABLE LIGHTING INTERFERENCE (DALI) SYSTEM	
SCHEDULE D18	
S.No.	Description
	Supply and Installation of Digital Addressable Lighting Interference (DALI) Based motion and light sensor for Basement, Stilt , common area, Fire & Main Staircase of Blocks and Club: -
1	Supply and installation of the 10/15 W DALI based lighting fixtures
2	Supply of central processor assembled processor with two configurable links. Each processor link can be configured to be a dimmer link, shade link, or dimmer power panel link. Processor accepts 220-240V, 1 phase, 2 wire, 10A feed, (through power supply) .The unit shall be similar to Lutron Make Athena QP-2L
3	Supply of Power Supply Unit for supply PDUs to Antenna devices
4	Supply, of Lighting control and monitor software, Software for Energy Reporting & monitoring per processor.
5	Supply of Lighting control BACnet software's for BMS integration.
6	Supply of Wire Landing Board
7	Supply of Eco system/DALI Dimming controller; Controls 2 independent DALI links with up to 64 DALI ballasts /Drivers and 64 Zone Capacity per link. Requires mains/line voltage feed
8	Supply of 4 channel Switching Module having 5A Load Capacity of each channel
9	Supply of ceiling mount Sensor Module, to connect 10 number of sensors either of the Occupancy / Daylight / Personal sensors/Plco. No wired connection between Sensor Module and Wireless devices like sensors and Keypads
10	Supply, installation, testing and commissioning of Wireless personalised control Keypad with a WPC approved frequency of 865 Mhz, 3 Button with raise and lower for smaller rooms, with faceplate, mounts on glass surfaces also, with guaranteed 10 year battery life along with necessary fixing arrangements and programming at site etc
11	Supply, installation, testing and commissioning of Wireless personalised control Keypad with a WPC approved frequency of 865 Mhz, 6 Button with raise and lower for bigger rooms, with faceplate, mounts on glass surfaces also, with guaranteed 10 year battery life along with necessary fixing arrangements and programming at site etc, complete as required .
12	Supply of 8/ 10 Button engraved Backlit Keypad with Master Raise and lower
13	Supply of ceiling mounted Wireless Daylight Sensor for rooms and workstations near glazing with operating frequency 865 MHz• daylight sensor has simple calibration. • Designed to give a linear response to changes in viewed light level. • Light range 0 to 1600 lx (0 to 150 fc). • Uses Clear ConnectR technology.

S.No.	Description
14	<p>Supply of Radio Power Saver wall-mounted occupancy and vacancy sensors are wireless, battery-powered, passive infrared (PIR) sensors that automatically control lights via RF communication to compatible dimming or switching devices. These sensors detect the heat from people moving within an area to determine when the space is occupied. The sensors then wirelessly transmit the appropriate commands to the associated dimming or switching devices to turn the lights on or off automatically With Floowing Features :• Wireless occupancy / vacancy sensor has 2 settings available: Auto-On / Auto-Off, and Manual-On / Auto-Off</p> <ul style="list-style-type: none"> • Vacancy model meets CA Title 24 requirements • Passive infrared motion detection with exclusive Lutron XCT Technology for fine motion detection • 180° field of view model: <ul style="list-style-type: none"> – Minor motion = 1500 ft2 (139.4 m2) – Major motion = 3000 ft2 (278.7 m2) • 90° field of view model: <ul style="list-style-type: none"> – Minor motion = 1225 ft2 (113.8 m2) – Major motion = 2500 ft2 (232.3 m2) • Hallway model with long, narrow field of view: <ul style="list-style-type: none"> – Major motion = coverage of up to 150 ft (45.7 m) • Simple and intuitive adjustments available for Timeout, Activity, and Auto-On settings • Accessible test buttons make setup easy • Lens illuminates during test mode to verify ideal locations • Multiple sensors can be added for extended coverage; refer to product specification submittal of receiving device to determine system limits • 10-year battery life design
15	<p>Supply of Radio Power Saver occupancy / vacancy sensors are wireless, battery-powered, passive infrared (PIR) sensors that automatically control lights via RF communication to compatible dimming and switching devices. These sensors detect the heat (IR radiation of 9.5 μm) from people moving within an area to determine when the space is occupied. The sensors then wirelessly transmit the appropriate commands to the associated dimming and switching devices to turn the lights on or off automatically With Features: Wireless occupancy sensor has 3 settings available: Auto-On/Auto-Off, Auto-On Low-Light/Auto-Off, and Manual-On/Auto-Off</p> <ul style="list-style-type: none"> • Auto-On Low-Light feature will turn lights on automatically only if there is less than approximately 10 Lux (1 fc) of ambient light • Uses Clear Connect technology • Passive infrared motion detection with exclusive Lutron XCT Technology for fine motion detection • 360° coverage ranges from 324 ft2 (30.2 m2) to 676 ft2 (62.4 m2), depending on mounting height. • Front accessible test buttons make programming easy • 10-year battery life design
16	DB BOX for mounting dimming , swithcing module - 4 tier 56 module flexi db
17	<p>Supply of Communication Cable QS-CBL-LSZH-500 – 152 m (500 ft) spool • Adheres to CE standards for Low Smoke Generation (EN 60332-1-2), Halogen Gas Emission (EN 61034-2), and Flame Retardation (EN 60754-1&2).• Five Conductors: Common – 0.75 mm2 (18 AWG) Power – 0.75 mm2 (18 AWG) MUX Data – 0.25 mm2 (22 AWG) _ Data – 0.25 mm2 (22 AWG) Drain Wire – 0.2 mm2 (24 AWG) • Total Outer Jacket Diameter: 5.3 mm (0.21 in). • 300 V~ rated. • LSZH sheath, 70 °C rated. • RoHS2 Compliant. • CE Compliant (LVD). • CPR Classification: Eca. • Capacitance of 0.25 mm2 (22 AWG) Twisted Wire Pair: – Conductor to Shield: 178 pF/m (54 pF/ft) max – Conductor to Conductor: 96 pf/m (29 pF/ft) max</p>

S.No.	Description
18	Supply of Communication Cable GRX-CBL-46L-500 – 500 ft (150 m) spool • Listed as type CL3R or CMG cULus. • Six stranded conductors: Common – 12 AWG (4.0 mm ²) Power – 12 AWG (4.0 mm ²) MUX Data – 22 AWG (0.25 mm ²) _ Data – 22 AWG (0.25 mm ²) Sense Line – 18 AWG (0.75 mm ²) Drain Wire – 24 AWG (0.2 mm ²)* • Total outer jacket diameter: 0.325 in (8.25 mm). • 300 V rated. • PVC sheath, 75 °C rated. • UL Listed. • Rated FT4. • cULus or CSA Listed. • CPR Classification: ECA • Capacitance of 22 AWG (0.25 mm ²) twisted wire pair: – Conductor to shield: 48 pF/ft max – Conductor to conductor: 25 pF/ft max
19	2X 1.5 Sq mm Sheath unarmoured cable as required
20	CAT 6 cable as required
21	MS Conduit 25mm as required
22	LMS SERVER: • Intel® Core i7 (4 cores, 8 threads 2.5 GHz) or AMD® equivalent processor • 16 GB RAM • 500 GB* SSD hard drive • Screen with minimum 1280 x 1024 resolution • Minimum 100 MB wired • Ethernet network interface
23	Designing, Installation, Programming, testing & Commisioning as required by Engineer in charge
	Makes: Lutron/Zumtobel/Leviton
	DB makes: ABB/Schneider/Legrand
	Wires: Bonton/Polycab/RRKabel
	Cat 6: Dlink
	Conduit: BEC/AKG
	Server: Dell/HP/Lenevo

CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
MODULAR KITCHEN	
SCHEDULE D19	
S.No.	Description
	Supply and Installation of Modular Kitchens in Units. The shade and colour of Laminate shall be approved by Architect/CGEWHO before placing order to the vendor.
1	<p>Supply and Installation of Factory Made Modular kitchen as per schematic drawings. Vendor shall prepare a detailed shop drawing considering actual site dimensions with provision for all required services (Eg. Electrical, Plumbing, Gas, Chimney Exhaust,etc.) The Kitchen shall comprise the following items:</p> <p>a. Base material : HDHMR (Greenply, Century, Action Tesa)</p> <p>b. Shutter's and Visible side Finish : 1.0 mm High Gloss Laminate (Merino,Durian, Greenlam).</p> <p>c. Liner: 0.7mm laminate (Merino,Skydecor,Safelam.Touchlam)</p> <p>d. Cabinets - Required Cabinets as per Drawing.</p> <p>e. Partition : Ply with 0.8mm laminate on outside</p> <p>f. Hinges: Soft Close hinges (Hettich/Inox/Hafele)</p> <p>g. Tandem Box/Innotech Channels: Soft close Imported.</p> <p>h. Profile Handle for shutters and drawers: Aluminum Profile handle (G Type) from Hettich</p> <p>i. Cutlery Tray: PVC (Hattich)</p> <p>j. Skirting: 100mm PVC (Rehau or equivalent)</p> <p>k. Legs: PVC (Rehau or equivalent)</p> <p>l. Drawer storage organizer:Plain Tray, Cutlery Tray, Anti Slip mat in all drawers and cabinets, Round Dust Bin, Cargo Plus Thali.</p> <p>All items are from above mentioned makes only. All shutters shall have PVC Edge Bands on all four sides. Finish of PVC Edge band shall as per architects selection. The modular kitchen shall have a 5 Years Warantee against Manufacturing defect. The work shall be complete including all the required accessories for fixing the kitchen at site as per drawing and to the satisfaction of Architect.</p>


GARG & ASSOCIATES
 46, REGAL BUILDING
 CONNAUGHT PLACE
 NEW DELHI-110061
 GAGAN GARG
 CA-No.-99/26499



CENTRAL GOVERNMENT EMPLOYEES WELFARE HOUSING ORGANISATION	
SCOPE OF WORK	
SOLAR WATER HEATING SYSTEM	
SCHEDULE D20	
S.No.	Description
	Supply and Installation of Solar Water Heating System shall be installed in units if required by EIA. The scope may be reduced if required by CGEWHO.
1	Supply, erection, testing & commissioning of solar water heating system with following details:
	System temperature output : 60 degree C (during clear sunny days)
	System type : Thermo siphon
	System : Non Pressurised
	Application : Bathing / Washing / Cooking
	Type of Solar Collectors : Glass tube Evacuated Tube type
	Number of Collector : To suit system requirement.
	Hardware : SS 304
	Insulation : PUF
	Hot Water Tank : Cylindrical - vertical / horizontal, Stainless steel 304 grade with insulation including 22 SWG aluminium cladding.
	The entire system should be complete with internal piping in G.I. (class B) with 50 mm rock wool insulation of density 48 kg/m ³ with 26 SWG Al cladding, necessary isolation valves, Y type CI strainer, hardwares, temperature gauge of range 0 - 120°C, water meter, Aluminium / G. I. structure / stand as required to complete the system in all respects.
	The solar system shall be installed on Terrace of Units, mumty and Machine room wherever possible. The Solar system for club also shall be installed on Terrace of Units and the cost of separate pipes & insulation from terrace to Club deemed to be included in the quoted rates.
	The entire system should be approved by as per local regulations.(Make: Racold/ Supreme/ V Guard/Honeywell / Tata BP Solar)
	System Capacity : 500 liters per day (LPD) per wing of S+20 flats (Total 8 Wings) & 100 Liters per day for Club.

SCHEDULE 'E'

APPROVED MAKES OF MATERIALS

Sr. No.	ITEM	BRANDS SPECIFIED
A	CIVIL	
1	Pre-Laminated Flush Doors	Duro Jayna Jain Doors Pvt. Ltd. Marino
2	Iron Mongery (SS)	Godrej Dorset IPSA
3	Locks	Godrej Dorset GEZE
4	Polished Glazed Vitrified Tiles (PGVT)	Kajaria AGL Somany Orientbell
5	Glazed Tiles	Kajaria Somany AGL Orientbell
6	Ceramic Tiles	Kajaria Somany AGL Orientbell
7	Pre laminated Particle Board	Greenlam Novapan Greenpanel Durian Marino
8	Wooden Door Frames/Shutters (2 nd Class teak wood)	Jain doors Pvt. Ltd. Jain Wood Industries Sricon Prefab
9	Water proofing compound	Zypex Vandex Krytone
10	Atactic Polypropylene Polymer	Tiki Tar STP Sika
11	Sealant/ Additive	Asian Paints Fosroc Cico
12	Glass	Modi Guard (Guardian) Saint-Gobain Asahi India
13	Polymers Sealant Concrete Additive	Sika CICO Fosroc
14	OPC Cement	UltraTech Shree Cement Birla Cement Corporation of India Limited JK Lakshmi Cement Rockstrong
15	Expanded Poly Strene	BASF Fosroc
16	Cement (White)	JK Birla

Contractor



CGEWHO

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Sr. No.	ITEM	BRANDS SPECIFIED
17	Anti-Termite Treatment Agency	M/s Pest Control Co. M/s Pest Control Incorp. M/s Pest (I) Co. M/s Pest Killers
18	Cement Board False Ceiling	Everest Shera Board Unidus
19	Paints (Premium)	Nerolac ICI Asian Paints Berger
20	Adhesive	Dunlop Fevicol Mowicol
21	Steel Reinforcement	TISCO, SAIL, RINL, JINDAL PANTHER SHYAM STEEL INDUSTRIES, JSW
22	Letter Boxes	Global Star Raja Industries Pvt. Ltd.
23	False Ceiling Tiles	Ramco Hilux Aerolite Unidus Saint Gobain Gyproc
24	False Ceiling GI Grid	Unidus Armstrong Aerolite Saint Gobain Gyproc
25	Cement Based Putty	Birla JK
26	SFRC Covers/Kerb Stones/saucer drain	KK Manholes Duratuff
27	Concrete Benches/ RCC Dividers	KK Manholes Surabh Ferro Concrete Private Limited
28	Dash/.Anchor Fastener	Hilti Würth Fisher
29	POP	Birla White Zypsofine JK Lakshmiplast Ultra Shree
30	Admixture	Fosroc Sika Cico
31	SS Railing Section (Grade-304)	JSL Hindalco Tata
32	Solar Panel/ Solar water heating system	V-guard Havells Luminous
33	Aluminum system Door & Windows	Schueco Reyners Fenesta Aluminium (Alumil)
34	ACP sheet	Alucobond Alstrong Eurobond
35	Ready Mix Concrete (RMC)	UltraTech ACC (Adani) Prism RMC

Sr. No.	ITEM	BRANDS SPECIFIED
36	Aluminium Wet Cloth Hanger	Burhani Universal Steel Furniture Dhani Creations
37	Plastic Dust Bin	Supreme Nilkamal
38	20mm Thick Drain Cell with Prefix Geotextile	Ovilite Viredra Textiles Siddhi Rubber
39	Upvc door/windows	Window magic, Encraft, Alu plast ,Fenesta Veka ,Wintech.
40	Ready Mix Plaster	UltraTech Readyplast Birla Aerocon JK Smart Plaster
41	AAC Blocks	JK Smart Blox Biltek Aerocon Megicrete Modcrete-Ashtech
42	AAC Block Adhesive	Ferrous crete(ferro-1188) Ardex endure (white star) Ultra tech (fixo block)
43	Fire check doors/ Fire rated door & frame	Navair Shakti Harmann Godrej TATA Pravesh
44	Fire door fittings /Panic bars / Hardware	Dorset kaba Dorma Kitch As per manufacturer specification in S. No 43
45	Interlock tiles/grass paver blocks/ kerb stone/ screens/ designer floor tiles/ columns /mouldings/ wall claddings	Unistone Terra firma Mahesh GRC Dalal tiles Mrk GRC Encore GRC
46	Rolling shutter	Rama Prakash Gandhi Automation
47	Multiwall Polycarbonate sheet	Danpalon Sunpal GE plastic (all standing seam type)
48	Silicon sealant	Dow corning (dc-995, dc-983, dc-791) Sikasil (r) (sg-18, ig-25, ws-305)
49	Stainless steel friction stay	Earl bihari Neelkanth Arkay ebco
50	Textured paint external (Premium)	Berger Asian paints ultima Europa ICI Nerolac
51	Glass mosaic tiles	Mridul Italias Bisazza
52	D.I. Drain Cover	Neco Jayaswal Bangal Iron Corporation Shri Jagannath Iron Foundary P Ltd

Sr. No.	ITEM	BRANDS SPECIFIED
53	Rubber Safety Tiles	Koochie Sunflex Polymax
54	Laminated Wooden Flooring	Pergo Armstrong Greenlam Century Ply Merino
55	Laminates/Linear	Greenlam Century Ply Merino Durian
56	Furniture	Durian Featherlite Godrej Deolite
57	Gym Equipments (Indoor & Outdoor)	Technogym Fitness World Cult
58	Sliding Folding Partition	Ozone Dorma
59	Aluminium Shuttering	S-Form India P Ltd, Gurgaon Balaji AluBuilt Faridabad Knest AluForm Pune
60	Diaphragm Wall Contractors	Heritage Infraspace (I) Ltd Wagad Infra Project (P) Ltd. Keller India
B	SANITARY	
1	Vitreous China Ware/ WC Seat Cover	Kohler Jaquar Grohe Roca Geberit
2	Stainless Steel Sinks	Prestige Jayna Nirali
3	CP Fittings, Accessories	Kohler Jaquar Grohe Roca Euronics (Accessories Only)
4	CP Waste & Flush Pipes	Kohler Jaquar Grohe Roca
5	Gun Metal Valves	RB Danfoss Zoloto
6	CPVC Pipes & Fittings	Astral Ashirwad Supreme Finolex Ajay
7	MS Pipes	TATA Jindal
8	uPVC Pipes & Fittings	Astral Ashirwad Supreme Finolex Ajay
9	SCI Hubless Pipe	Neco

Sr. No.	ITEM	BRANDS SPECIFIED
	(IS: 15905)	Saint Gobain (Pam)
10	DI Pipes, fittings	Kesoram Electrosteel Jainsons
11	Pumps	Grundfoss ITT Kirloskar
12	Elec. Switchgear & Starters	Siemens ABB Schneider
13	Floor drain fixture & channel Grating	Neer Chilly Kitch
14	Pipe clamps & supports	Chilly Euro clamp Kitch
15	Butterfly Valve	Audco Kirloskar Zoloto
16	Pressure reducing valve	Zoloto Honeywell
17	Gate/ Ball Valves	Zoloto Honeywell RBM
18	Flow Meter	Rockwin Marshal Karanti Fair Flow
19	Level Controller/ Indicator (Water)	Advance automation Diamond
20	Insulation for hot water pipe	Thermoflex Kflex Armacell
21	Submersible/Drainage/Sewerage Pumps	Grundfoss DP Holland ITT Kirloskar
22	HDPE pipe	Kissan Finolex Supreme
23	RCC Pipes (NP2 Class)	Om Spun BHRC Pragati JK Spun
C	ELECTRICAL	
1	MCCB's (Adjustable overload and adjustable short circuit release)	Schneider Siemens ABB Hager
2	Cables	RR Kabel Havells Batra Henley Polycab KEI
3	MCB's, ELCB's, RCBO's & RCCB's	Siemens Legrand Schneider ABB
4	ACB's	Schneider: NW Series Siemens: 3WT Series Mitsubishi: WS Series
5	MCB & DB/ONT	Legrand Schneider

Sr. No.	ITEM	BRANDS SPECIFIED
		ABB Hager
6	Indication Lamps	Schneider Electric Siemens
7	Push Buttons	Schneider Electric Siemens
8	Selector Switches	ABB Kaycee Siemens
9	Electrical Terminals	Elmax Connectwell
10	Meters-Analogue	AE Schneider-Conzerv
12	Cast Resin Current Transformers	AE Gilberts & Maxwell Matrix
13	Cast Resin PT's for metering in LT Panels	AE Gilberts & Maxwell Matrix
14	FRLS PVC Conduits & Accessories	BEC Polypack AKG Atul Precision
15	Ceiling rose & holder	Kay Khosla MMP Anchor Atul
16	MS / GI Conduits & Accessories	BEC ATUL AKG Polypack
17	Switches & Sockets- Modular type & Industrial Type and G.I Box	WIPRO NORTHWEST PLATIA HAVELLS- CRABTREE-MURANO LEGRAND-MYRIOUS SCHINDER-UNICA
18	Lighting Fixtures	HAVELLS POLYCAB BAJAJ PHILIPS
19	Tube Lights & Lamps	Philips Osram Havells
20	Exhaust Fans / Ceiling Fans	Usha Crompton Greaves Havells Polycab
21	1100 V grade ZHLS (Zero Halogen low smoke) ZHLS Polymer insulated, unsheathed, flexible, copper conductor wires	Finolex Havells Batra Hanley RR KABEL Polycab KEI
22	1100 V grade FRLS (Fire Retardant low smoke) HR FRLS PVC insulated unsheathed, flexible, copper conductor wires	Finolex Havells Batra Hanley RR KABEL Polycab

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Sr. No.	ITEM	BRANDS SPECIFIED
		KEI
23	1.1kV grade LT XLPE insulated, HR PVC sheathed, stranded Al. / Cu. conductor, Armoured/ Un-armoured cables as per IS:7098 Part-I	Finolex Havells Batra Hanley
24	Cable lugs & thimbles	Dowell Convert Cosmos Commel
25	TV Co-axial Cable	Finolex Havells Batra Hanley Polycab
26	Jelly Filled Armoured Tele. Cables	Finolex Havells Batra Hanley
28	Exit Signage	Prolite Glolite Cease Fire MK Prestolite
29	Cat-5 / Cat-6 Voice / Data Cables	Batra Hanley AMP Havells Beltron
30	Voice / Data Face Plates	WIPRO NORTHWEST PLATIA HAVELLS- CRABTREE-MURANO LEGRAND-MYRIOUS ABB-IVIE Schneider Unica Beltron
31	Tele Tag Blocks	Krone
32	Switchgear	SCHNEIDER ABB Siemens
33	Final Distribution Boards	SCHNEIDER ABB Siemens
34	Lightning Arrestor System (Control steamer Emission Type)	Erico LPI OBC
35	Maintenance free chemical earthing	Erico JK OBC
36	Fire sealing compound	Hilti Birla-3M Promat
38	UPS	Emerson APC Schneider Eaton Pegasus (AAL)
39	Batteries (Sealed Maintenance Free)	Panasonic Exide Hitachi Amaron


GARG ASSOCIATES
 45, NEHA, ELEGANCE
 CONNAUGHT PLACE
 NEW DELHI-110028
 SAGAN GARG
 CHAIRMAN



Sr. No.	ITEM	BRANDS SPECIFIED
40	Boom Barrier	Gandhi Automation FAAC Park Plus GEZE
41	Copper pipe	Godrej VISIARO
42	Sub Panels	SPC Electrotech Brilltech LS Power Advance Panel Control Wel Switch gears
43	Rising Mains	C&S Siemens ABB L&T Schneider
44	Automation controller for staircase light	Wago Siemens GE
45	Automation sensors for staircase light	Wago Siemens GE
46	Light fixtures (LED dali compatible with blast)	Banbury Energy Wipro K-Lite
47	LMS software for automation of lights	Wago Siemens GE
48	HMI/ Touch screen display	Wago Renu Delta
49	Fire Sealant	Promoseal Birla 3M Hilti
(a)	LOW VOLTAGE & SECURITY SYSTEM:	
	INTELLIGENT FIRE ALARM SYSTEM:	
1	Intelligent fire alarm system	Notifier Honeywell XLS 3000 Siemens Johnson Control (IFC Series)
2	Detectors / Manual call points / Hooters / speakers / control modules / Monitor modules / graphic software etc.	Notifier Honeywell XLS 3000-Eclipse Johnson Control (IFC Series)
3	Response Indicator	Honeywell XLS 3000-Eclipse Anshul Johnson Control (IFC Series)
4	Evacuation PA System	Notifier Honeywell XLS 3000-Eclipse Johnson Control (IFC Series)
5	Twisted FRLS Cu. Conductor Cable/MICC Cable	Finolex Batra Hanley Havells Bonton
6	MS /GI Conduit (Heavy duty)	BEC Steel Craft AKG

Sr. No.	ITEM	BRANDS SPECIFIED
		Precision Atul
(b)	CCTV SYSTEM:	
1	Cameras	PELCO (Schneider) Bosch Honeywell
2	Monitor	PELCO (Schneider) Sony Honeywell
3	DVR	Interlogix PELCO Honeywell
4	Co- axial / Multi core Cable	Finolex Batra Hanley Havells Polycab
5	FRLS PVC Conduit (heavy duty)	BEC Polypack AKG Atul
D	FIRE PROTECTION	
1	Hosepipe of type 63mm dia RRL	Safex Fire Solutions Ltd. Reliance Fire & Safety Ltd. UTC Fire & Safety India Ltd.
2	Hydrant Valves with 63mm dia single outlet	Safex Fire Solutions Ltd. Reliance Fire & Safety Ltd. UTC Fire & Safety India Ltd.
3	Branch pipe with nozzle	Safex Fire Solutions Ltd. Reliance Fire & Safety Ltd. UTC Fire & Safety India Ltd.
4	Cl gaze valves class PN 1.0	Leader Sant SKS Zoloto
5	Non-return valve	Kirloskar Leader Sant SKS Zoloto
6	Motor	Kirloskar Siemens Crompton
7	Fire Alarm Panel	Electroequip UEC
8	Hooter	Electroequip UEC
9	Fire extinguishers	Minimax Safe Guard Safex Fire Solutions Ltd. Reliance Fire & Safety Ltd. UTC Fire & Safety India Ltd.
10	Battery	Exide Amaron Hitachi Panasonic
11	Fire Resistance Paint	Viper

Sr. No.	ITEM	BRANDS SPECIFIED
12	FHC Door	Tata Parvesh Pacific Nauair Jindal Udyog Ltd.
13	Hose Box	Leader Sant Kompass India FCP India Zoloto
14	Sprinkler	Tyco Newage Ho Viking
15	Hose Reel	Safex Fire Solutions Ltd. Reliance Fire & Safety Ltd. UTC Fire & Safety India Ltd.
E	ELEVATORS	
		OTIS KONE JOHNSON SCHINDLER THYSENKRUPP
F	MECHANICAL VENTILATION	
		Airovient Fans & Systems Jet Aircon Schneider Electric Blue Star Ltd. Samvardhana Motherson Daikin Air-conditioning India Pvt. Ltd. Airflow

NOTES:

1. Above approved makes and accessories are subject to their meeting with the tender specifications & requirements. Contractor however shall seek approval of specific make from CGEWHO/ Architect before commencement of work.
2. For any item not covered in the above list, the contractor shall get the make and sample approved from the CGEWHO/Architect before procurement. The final choice of make to be used in the work will rest with the CGEWHO/Architect and the decision of CGEWHO/Architect shall be final and binding on the contractor in this respect.
3. The samples of material shall either get tested or have to be approved from the CGEWHO/Architect.
4. For material, where no make/brand has been mentioned, in that case, ISI marked samples shall be submitted by the contractor for approval of CGEWHO/Architect.
5. For those classes of materials, where no firm exists with ISI approval, samples of first quality material of the firm shall be submitted for the approval of the CGEWHO/Architect
6. Contractor will be responsible to ensure the quality of products listed in approved list of makes/brands. Contractor will have to replace the defective and substandard materials at his own cost.

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