PROJECT SPECIFICATION

Brief

1.0 PLUMBING/SANITARY/WATER & WASTE WATER TREATMENT:

1.1 CODE AND REGULATION:

Plumbing/Sanitary systems will be designed and installed in conformance with the following codes and standards:

- Regulations of the local authority.
- National Building Code (NBC) 2016.
- Manual on water supply and treatments published by Central Public Health and Environment Engineering Organization under Ministry of Urban Development, Govt. of India.
- Manual on sewerage and sewage treatment published by Central Public Health and Environment Engineering Organization under Ministry of Urban Development, Govt. of India.
- Relevant BIS Codes.
- Good Engineering Practice.

1.2 ANNEXURES FOR PLUMBING AND SANITARY WORKS:

S. No.	Description	Annexure No. / Detail
1.	Summary of Water Requirement for Commercial Building	Annexure-I
2.	Domestic Water Requirement for Commercial Building	Annexure-I(a)
3.	Area Statement for Commercial	Annexure-II
4.	Irrigation Water Requirement for Landscape/ Green Area	Annexure-III
5	Capacity & Quantity of Underground & Overhead Water Storage Tank	Annexure-IV
6	Water Balance & STP Capacity	Annexure-V
7	Design Basis for Selection of Tube Well/ Bore Well	Annexure-VI

1.3 WATER REQUIREMENT/CONSUMPTION:

- Domestic water requirement for shall be as per Annexure-I, II&III.

1.4 WATER STORAGE:

- Underground & overhead water storage shall be as per Annexure-IV.

1.5 WATER SUPPLY SYSTEM:

- The water supply from City Water Supply (Municipal Main), Bore wells & Truck fill point shall be brought to underground fire water storage tank and overflow from fire storage tank shall be taken to raw water storage tank in order to replenish the fire storage water. (Assuming the Bore Well and Municipal water are of potable quality).

- Water from Domestic Water Storage Tank shall be pumped through VFD based Hydro pneumatic System to overhead fire and domestic water tank.

- Water from overhead water tank shall be supplied to all toilets, wash basins and kitchen/ Pantry areas through gravity system.

- Flushing water recycled from STP shall be used for horticulture purpose.

1.6 HOT WATER SYSTEM :

- Hot water for domestic use in toilets(if required) shall be provided through solar water heating system independent domestic water Electric Heaters (Geysers) if required.

1.7 SEWERAGE:

- Drainage system for soil & waste is based on the most efficient, functional design, minimum maintenance after installation and available side topography to minimize the excavation work in laying the pipes, two pipe system (soil and waste) is proposed to carry soil and waste separately from the building under gravity.

- Waste pipes are connected to manhole through gully trap and soil pipes are to be directly connected to the manhole.

- The main sewage is carried through a battery of manholes and finally discharged into Sewage Treatment Plant (STP).

❑ BASIS OF DESIGN FOR SEWERAGE:

- It has been considered that 80% of the domestic water supply demand shall fine its way into the proposed sewer.
- The sewer lines have been designed for peak demand (three times Av. Dry Weather Flow in relation to the water supply demand).
- Necessary provision for laying S.W./R.C.C. sewer lines and manhole etc. have been made in the scheme.

Grease trap for kitchens is also provided before kitchen waste is discharged into Sewage.

1.8 GREASE TRAP:

Oil & Grease traps will be provided for pantry/kitchen/food court waste before discharging it into the Sewage Treatment Plant (STP) through waste line.

1.9 SEWAGE TREATMENT PLANT:

Sewage Treatment Plant of 35 M^3 / day for Commercial Building.

The Waste Water Treatment System will be treated using an extended aeration activated sludge type system .

ANNEXURE – I

❑ SUMMARY OF WATER REQUIREMENT FOR OFFICE BUILDING

S. No.	Description	Water Requirement	Reference Annexure No.
1.	Domestic	40 KLD	Annexure – I
2.	Miscellaneous use like decorative fountain and general washing (L.S.)	5.0 KLD	
3.	Irrigation Water Requirement	1.00 KLD	Annexure-III
➔	**Total Water Requirement**	**46.0 KLD**	

ANNEXURE – I (a)

- DOMESTIC WATER REQUIREMENT FOR COMMERCIAL BUILDING

S.N.	Description	Area (Sqm)	Population	Rate of water supply (lpcd)	Domestic water requirement (lpd)
1	Lower & Upper Basement	2320.98	50 (LS)	45	2250
2	Upper Floors	7010.45	700 (@1 person/10sqm	45	31500
3	Floating Population (25% of Total population)		175	45	7875
					41625

SAY 40000 LPD

⇒ **TOTAL DOMESTIC WATER REQUIREMENT = 40 KLD**

ANNEXURE-II

AREA STATEMENT FOR COMMERICIAL BUILDING

S. No.	Floors Description	Total Capacity (M^3)
1	Lower Basement	1160.49
2	Upper Basement	1160.49
3	Ground Floor	1050.66
4	First Floor to Fifth	5039.55
5	Sixth Floor	920.24
➔	**Total Covered Area for Lower and Upper basement**	**2320.98**
➔	**Total Covered Area for Upper Floors (SQM)**	**7010.45**

ANNEXURE-III

IRRIGATION WATER REQUIREMENT FOR LANDSCAPE/GREEN AREA

- Total Landscape/ Green Area = 128.98 m^2
- Considering 7.5 liter/Sqm water requirement for plotted area
- Total Irrigation Water requirement

= 7.5 x 128.98 Sqm

= 967.35 LPD

Say = 1000 LPD

⇨ **Total Irrigation Water Requirement = 1000 LPD**

ANNEXURE-IV

CAPACITY & QUANTITY OF UNDERGROUND

& OVERHEAD WATER STORAGE TANK

S. No.	Description	Qty (Nos.)	Capacity (M^3)	Total Capacity (M^3)
A)	**UNDERGROUND WATER STORAGE TANK :**			
1.	Domestic Water Tank	1	40	$40m^3$ capacity raw water tank
2.	Fire Water Tank	1	100	100 m^3 capacity fire water tank
B)	**OVERHEAD WATER STORAGE TANK :**			
1.	Domestic Water Tank	1	20	20 m^3 capacity domestic water tank
2.	Fire Water Tank	1	10	10 m^3 capacity fire water tank

Notes :

i) It is proposed to provide R.C.C. underground tanks for a capacity equivalent to half day water requirements for domestic purpose.

ii) Since the domestic water will be supplied by pressured system, it is proposed to provide R.C.C. overhead Domestic tank of capacity 20 KLD.

iii) Capacity of overhead fire tank shall be as per NBC 2016.

ANNEXURE-V

❑ **WATER BALANCE & STP CAPACITY**:

- Total Water Requirement = 46.0
  Recycled Water used for Flushing/Horticulture/ = 1.00

- Fresh Water Requirement from Tube wells

  = 46.00 – 1.00 KLD

  = 45.00 KLD

⇨ **Fresh Water Requirement = 45.00 KLD**

⇨ **Capacity of STP Proposed = 35.00 KLD**

ANNEXURE-VI

❑ **DESIGN BASIS SELECTION OF TUBE WELL/BOREWELL**

❑ **Tube Well/ Bore Well**

- Total Daily Fresh Water Requirement = 45000 Liter/day
  = 45.25 KLD
- Assuming an average yield of Tube well = 45000 Liter/Hour
- Considering Pumping Hour = 8 Hours
- No. of Tube Well Required = Daily Water Requirement / Pumping Hour x Discharge of tube well

= 45000 / 8 x 45000

= 0.125 Nos.

Say = 1.0 Nos.

⇨ **Total No. of Tube well proposed = 1 Nos.**

➔ It is proposed to provide 1 Nos. tube well to meet the entire water requirement.