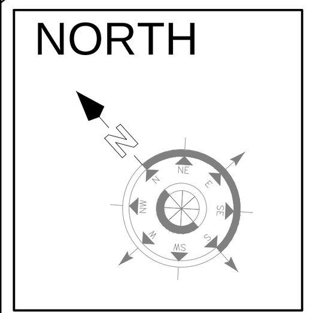
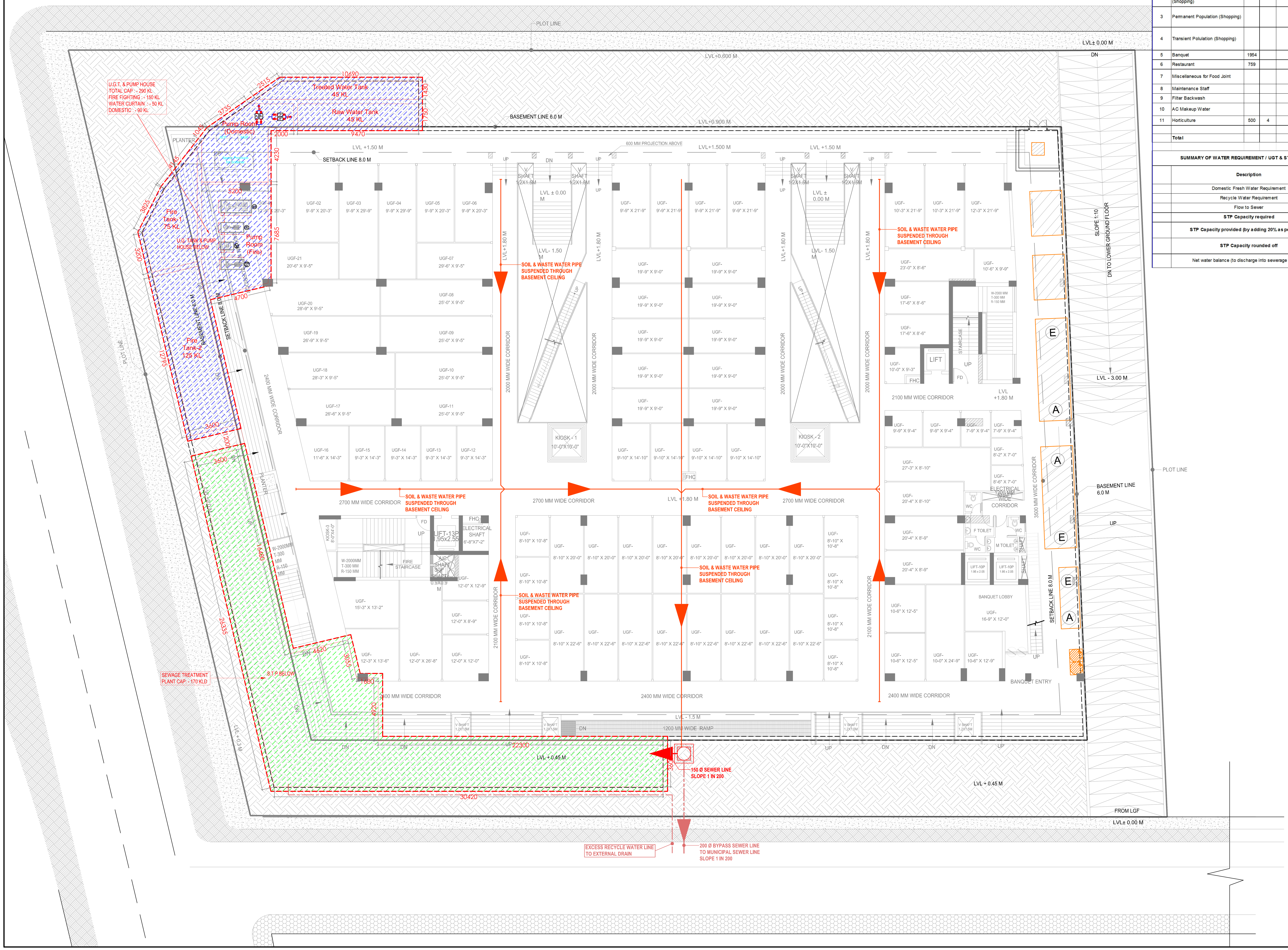


LEGEND :

S. No.	SYMBOL	DESCRIPTION
1.	M.H.	MANHOLE
2.		SEWER LINE
3.		BASEMENT RETAINING WALL



WATER REQUIREMENT CALCULATIONS

S.No.	Description	Built up Area	Horticulture Water Requirment	No. of Units / Seats	Unit Population	Total Population	Domestic Fresh Water Requirement (A)		Recycle Water Requirement (B)		Total Water Requirement (A+B)	Flow to Sewer		
		(Sq.M)	per Sq.M Area				LPCD	LPD	LPCD	LPD	LPD	Domestic 80%	Flushing 100%	LPD
1	Population (Sales Basement & Street Floors) (Shopping)	4546			3 SqM/person	1520								
2	Population (Upper Sales Floors) (Shopping)	4368			6 SqM/person	730								
3	Permanent Population (Shopping)				@ 25% of total population of Shopping	560	25	14000	20	11200	25200	11200	11200	22400
4	Transient Polulation (Shopping)				@ 75% of total population of Shopping	1690	5	8450	10	16900	25350	6760	16900	23660
5	Banquet	1954			1.4 SqM/person	1400	25	35000	20	28000	63000	28000	28000	56000
6	Restaurant	759			1.8 SqM/person	430	55	23650	15	6450	30100	18920	6450	25370
7	Miscellaneous for Food Joint							0			0	0	0	0
8	Maintenance Staff					100	25	2500	20	2000	4500	2000	2000	4000
9	Filter Backwash							6500			6500		6500	6500
10	AC Makeup Water									60000	60000			
11	Horticulture	500	4							2000	2000			
	Total							**90,100**		**1,26,550**	**2,16,650**	**66,880**	**71,050**	**1,37,930**

SUMMARY OF WATER REQUIREMENT / UGT & STP CAPACITY CALCULATION

Description	Water Requirement (KLD)
Domestic Fresh Water Requirement	90
Recycle Water Requirement	127
Flow to Sewer	138
STP Capacity required	**138**
STP Capacity provided (by adding 20% as per MOEF)	**166**
STP Capacity rounded off	**170**
Net water balance (to discharge into sewerage system)	11

DESIGN OF SEWER LINE

Total Sewage Load = 1,37,930 Lit/day
(As per water load calculations) or 1.60 Lit/sec

By taking Peak Factor @ 3
Peak Sewage Generated (3 times of Avg. Flow) = 4.79 Lit/sec

Sewer Pipe Design

Final Sewage Pipe Dia Selected = 150 mm
Slope (1 in ...) = 200

Sewer Design as per Manning Formula

$$V = \frac{3.968 \times 10^{-3} \times D^{2/3} \times S^{1/2}}{n}$$

V = 0.72 m/sec

D = Dia (mm) = 150 mm
S = Slope = 200
n = Manning Coeficien = 0.011
V = Velocity (m/sec)

Actual Pipe Capacity (Q) at 100% flow $= \frac{\Pi D^2 \times V}{4}$

= 0.012719 m^3/sec
Q = 12.72 Lit/sec

Where -
D = Dia (mm) = 150 mm
V = Velocity (m/sec) = 0.72
Q = Pipe Capacity (at full flow) m3/sec

Peak Sewage Generated (site peak discharge) = 4.79 Lit/sec
Actual Pipe Capacity at 100% flow = 12.72 Lit/sec
Site peak discharge is less then 50% of pipe capacity, hence 150 mm Pipe Dia is OK

rev. no.	date	revision
..	..	..

project
PROPOSED COMMERCIAL COMPLEX
AT Plot No-COMMERCIAL-1A, WAVE CITY GHAZIABAD (U.P.) 201002

title
LAYOUT PLAN

subtitle
EXTERNAL SEWERAGE SYSTEM

drawing released for
☐ APPROVAL ■ SUBMISSION
☐ ADVANCE COPY ☐ CONSTRUCTION

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