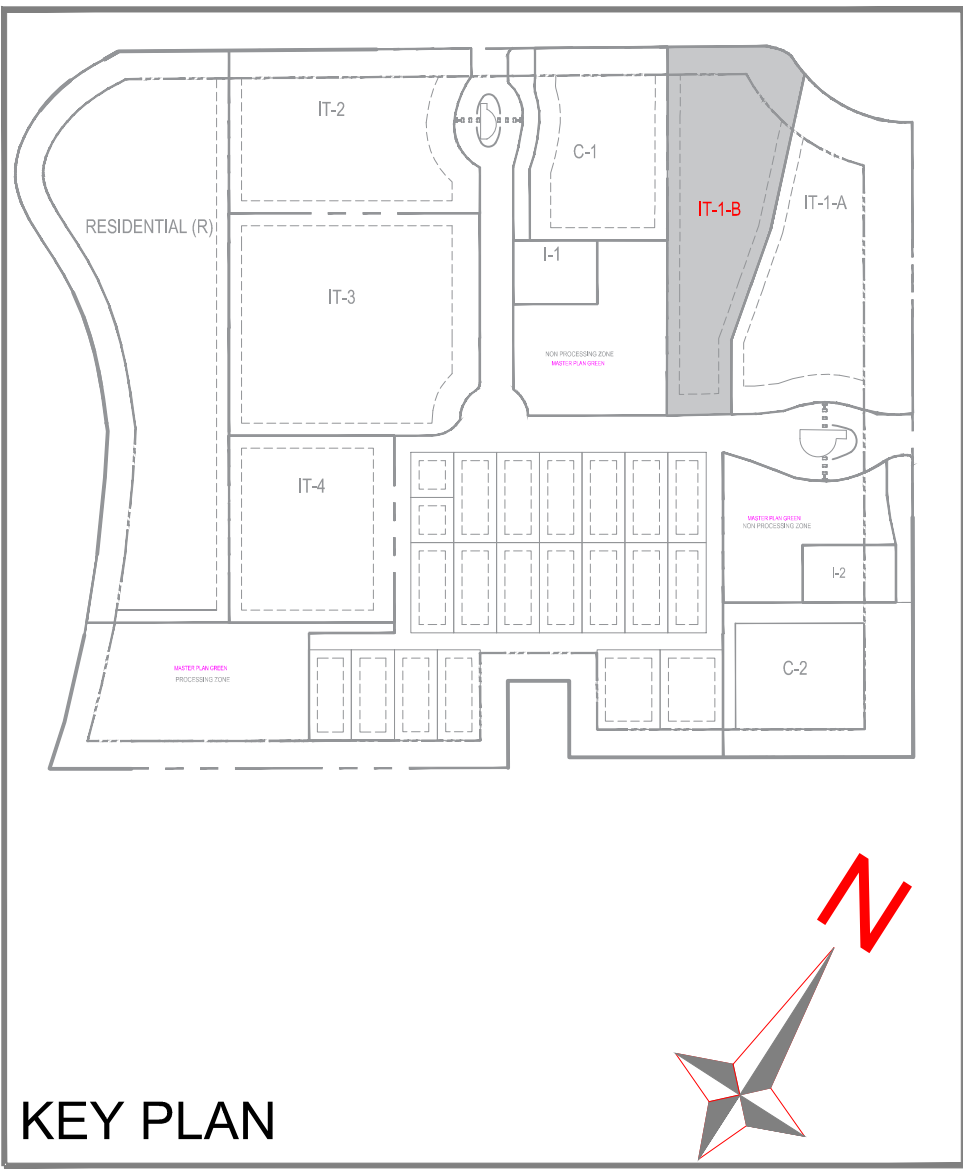
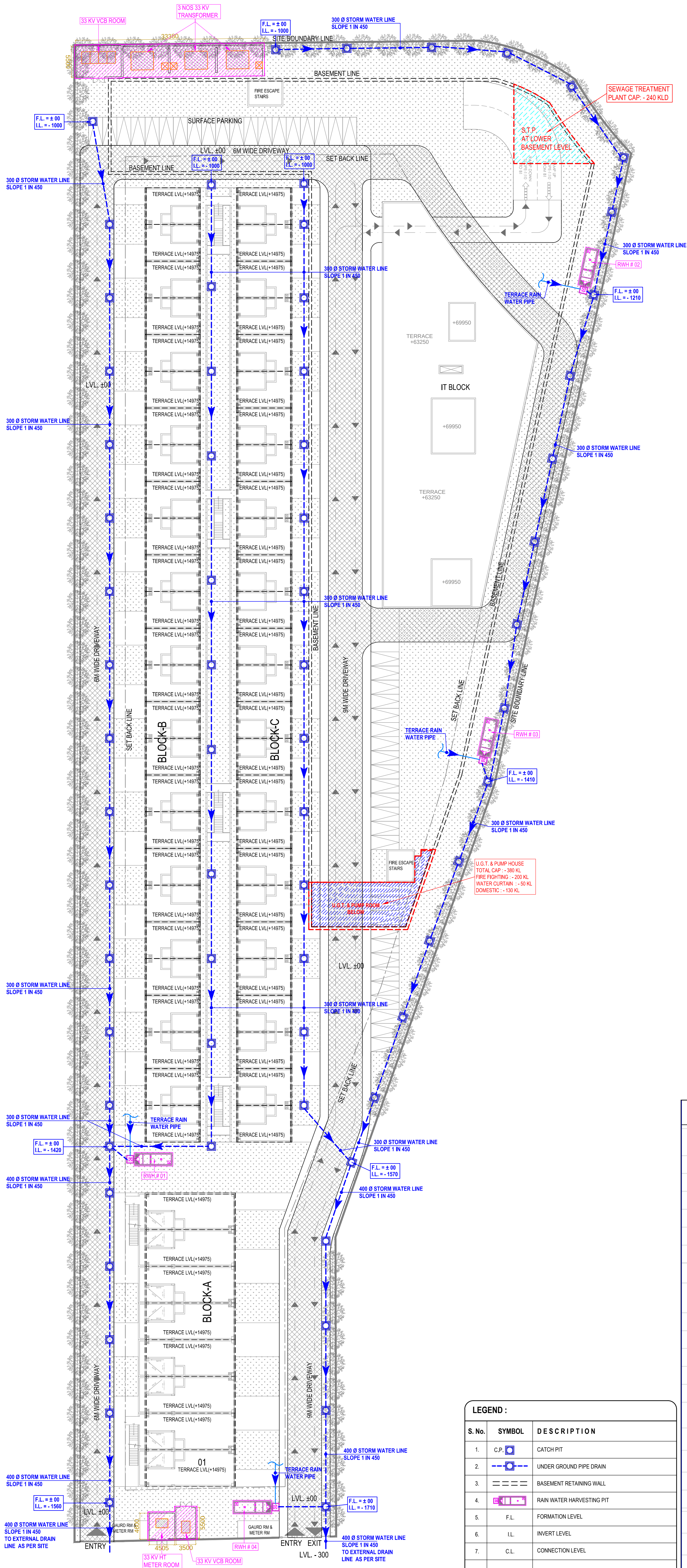




RUN OFF COEFFICIENT CALCULATION	
Average Run off coefficient calculation	
Breakup of areas	
Roof Top area, A1	= 5621 sq.m.
Road area, A2	= 3180 sq.m.
Green area, A3	= 6791 sq.m.
Parking/ Misc Area, A4	= 3144 sq.m.
Total catchment area, A	= A ₁ +A ₂ +A ₃ +A ₄
	= 18736 sq.m.
By taking run off coefficient for,	
Roof Top area, C1	= 0.90
Road area, C2	= 0.80
Green area, C3	= 0.15
Parking / Misc Area, C4	= 0.30
Average run off coefficient, C	= (A ₁ XC ₁ +A ₂ XC ₂ +A ₃ XC ₃ +A ₄ XC ₄)/A
	= 0.51

DESIGN OF DRAIN LINE	
Rainfall intensity (I)	= 50 mm/hour
Coefficient of Runoff (C)	= 0.51
Area of Drainage district	= 1.87 Hectare
No. of Drain connection	= 2.00 Nos.
Area of Each Drainage district	= 0.94 Hectare
Total Site Discharge	= 10°C*I*A = 239 Cu M / Hour or 66.36 Lit/sec
Drain Pipe Design	
Final Drain Pipe Dia Selected	= 400 mm
Slope (1 in ...)	= 450
Drain Design as per Manning Formula	
$V = \frac{3.968 \times 10^{-3} \times D^{2/3} \times S^{1/2}}{n}$	
V = 0.92 m/sec	
D = Dia (mm)	= 400 mm
S = Slope	= 450
n = Manning Coefficient	= 0.011
V = Velocity (m/sec)	
Actual Pipe Capacity (Q) at 100% flow	= $\frac{\pi D^2 \times V}{4}$
	= 0.115950 m ³ /sec
Where -	
D = Dia (mm)	= 400 mm
V = Velocity (m/sec)	= 0.92
Pipe Capacity (at full flow)	
Q = m ³ /sec	
Total Site Discharge	= 66.36 Lit/sec
Actual Pipe Capacity at 100% flow	= 115.95 Lit/sec
Total Site discharge is less the pipe capacity, hence 400 mm Pipe Dia is OK	

RAIN WATER HARVESTING CALCULATION (For Roof Top)	
The capacity of tank and recharge pit is designed to retain runoff for at least 15 minutes of rain fall of the peak intensity.	
Peak Rainfall in one hour	= about 90 mm / hr
Peak Rainfall in 15 minutes, R	= 90 / 4 mm
	= 22.5 mm
say	= 25 mm
Peak Rainfall in 15 minutes, R	= 0.025 m.
Total Terrace area, A	= 5620.74 sq.m.
Run off coefficient, C (Roof)	= 0.90
Hence total combined capacity of desilting tank and recharge pit required,	= AxCxR
	= 127
Providing Desilting tank of size	= 2.5 x 1.75 x 3 m. effective depth
Capacity of desilting tank of given size (Cu.m.), a	= 13.13
Providing Recharge pit of size	= 3.5 x 1.75 x 3 m. effective depth
Capacity of recharge pit of given size (Cu.m.), b	= 18.38
Hence total combined capacity of one set of desilting tank and recharge pit, (Cu M)	= a+b
	= 31.51
Therefore no. of desilting tank and recharge pit required	= (AxCxR) / (a+b)
	= 4.04 nos.
say,	= 4 nos.
Hence, 4 nos. sets of rechrge pit and desilting tank are required of following size :	
Desilting tank	= 2.5 x 1.75 x 3 m. effective depth
Recharge pit	= 3.5 x 1.75 x 3 m. effective depth

LEGEND :		
S. No.	SYMBOL	DESCRIPTION
1.	C.P.	CATCH PIT
2.	—○—	UNDER GROUND PIPE DRAIN
3.	---	BASEMENT RETAINING WALL
4.	—■—	RAIN WATER HARVESTING PIT
5.	F.L.	FORMATION LEVEL
6.	I.L.	INVERT LEVEL
7.	C.L.	CONNECTION LEVEL

project
PROPOSED IT-1B, IT-SEZ, ON PLOT NO. TZ-6, GREATER NOIDA

title
LAYOUT PLAN
subtitle
EXTERNAL DRAINAGE SYSTEM

drawing released for
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drg. no.
IT-1B / 23B01 / ES-02
scale
1 : 375
date
20.07.2023

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