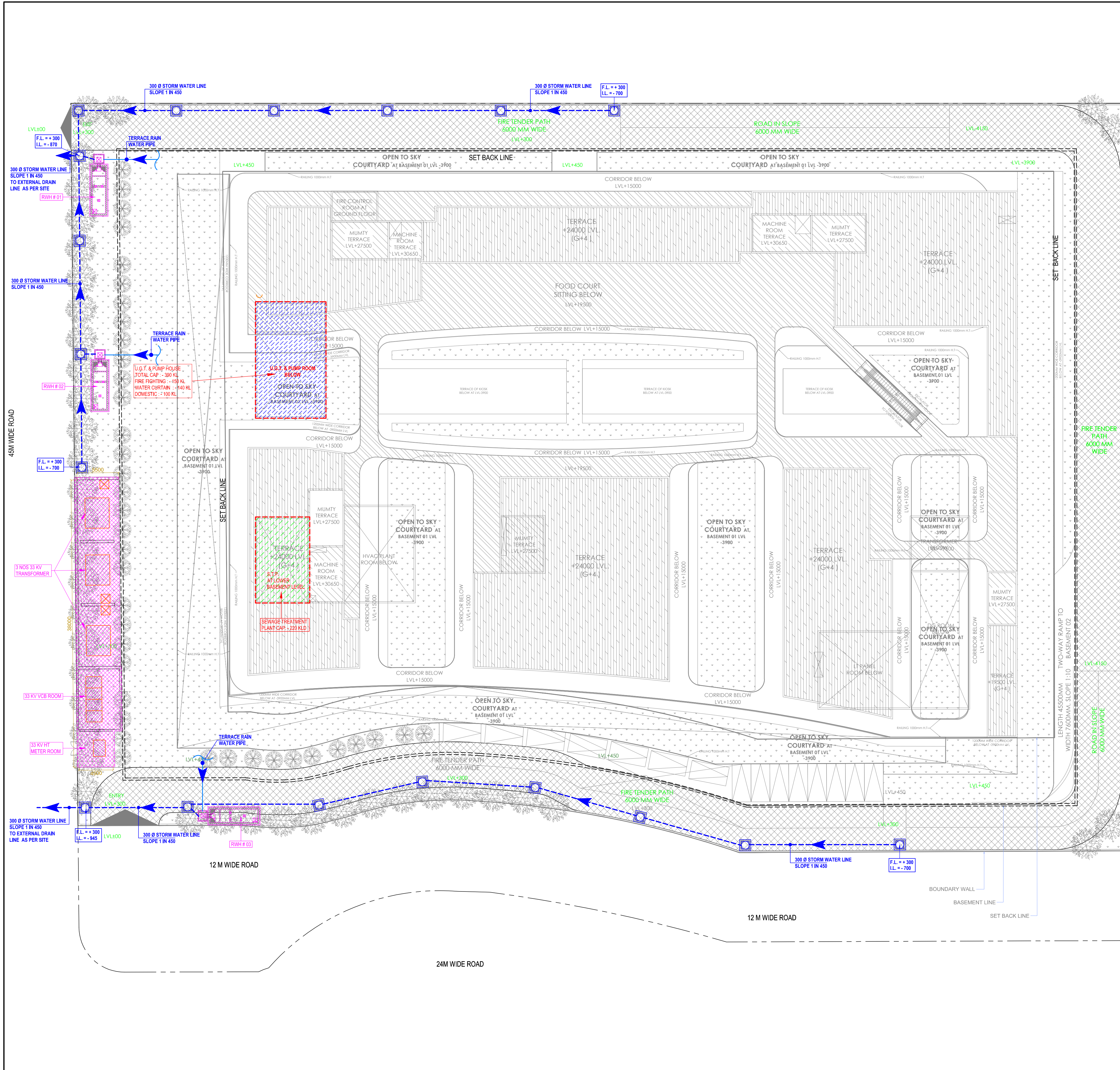




RAIN WATER HARVESTING CALCULATION (For Roof Top)	
The capacity of tank and recharge pit is designed to retain runoff for at least 15 minutes of rain fall of the peak intensity.	
Peak Rainfall in one hour	= about 90 mm / hr
Peak Rainfall in 15 minutes, R	= 90 / 4 mm
	= 22.5 mm
	say = 25 mm
Peak Rainfall in 15 minutes, R	= 0.025 m.
Total Terrace area, A	= 5337.992 sq.m.
Run off coefficient, C (Roof)	= 0.90
Hence total combined capacity of desilting tank and recharge pit required,	= AxRxxC
	= 121
Providing Desilting tank of size	= 2.5 x 1.75 x 3.8 m. effective depth
Capacity of desilting tank of given size (Cu.m.), a	= 16.63
Providing Recharge pit of size	= 3.5 x 1.75 x 3.8 m. effective depth
Capacity of recharge pit of given size (Cu.m.), b	= 23.28
Hence total combined capacity of one set of desilting tank and recharge pit,	= a+b
	= 39.91
Therefore no. of desilting tank and recharge pit required	= (AxRxxC) / (a+b)
	= 3.04 nos.
	say, = 3 nos.
Hence, 3 nos. sets of recharge pit and desilting tank are required of following size :	
Desilting tank	= 2.5 x 1.75 x 3.8 m. effective depth
Recharge pit	= 3.5 x 1.75 x 3.8 m. effective depth

RUN OFF COEFFICIENT CALCULATION	
Average Run off coefficient calculation	
Breakup of areas	
Roof Top area, A1	= 5338 sq.m.
Road area, A2	= 2160 sq.m.
Green area, A3	= 4095 sq.m.
Parking/ Misc Area, A4	= 1756 sq.m.
Total catchment area, A	= A1+A2+A3+A4
	= 13349 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	= (A1xC1+A2xC2+A3xC3+A4xC4)/A
	= 0.57

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

DESIGN OF DRAIN LINE	
Rainfall intensity (I)	= 90 mm/hour
Coefficient of Runoff (C)	= 0.57
Area of Drainage district	= 1.33 Hectare
No. of Drain connection	= 2.00 Nos.
Area of Each Drainage district	= 0.67 Hectare
Total Site Discharge	= 10°C1A
	= 190 Cu M / Hour
	or 52.84 Lit/sec
Drain Pipe Design	
Final Drain Pipe Dia Selected	= 300 mm
Slope (1 in ...)	= 450
Drain Design as per Manning Formula	
V =	$3.968 \times 10^{-3} \times D^{2/3} \times S^{1/2}$
V =	0.76 m/sec
D =	Dia (mm) = 300 mm
S =	Slope = 450
n =	Manning Coefficient = 0.011
V =	Velocity (m/sec) = 0.76
Actual Pipe Capacity (Q) at 100% flow	$\frac{ITD^2 \times V}{4}$
	= 0.053839 m³/sec
Q =	53.84 m³/sec
Where -	
D =	Dia (mm) = 300 mm
V =	Velocity (m/sec) = 0.76
Q =	Pipe Capacity (at full flow) m³/sec
Total Site Discharge	= 52.84 Lit/sec
Actual Pipe Capacity at 100% flow	= 53.84 Lit/sec
Total Site discharge is less the pipe capacity, hence 300 mm Pipe Dia is OK	

rev. no.	date	revision

project
PROPOSED COMMERCIAL DEVELOPMENT
AT PLOT C1 ON PLOT NO. TZ-6,
GREATER NOIDA, UTTAR PRADESH

title
LAYOUT PLAN

subtitle
EXTERNAL DRAINAGE SYSTEM

drawing released for
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☐ ADVANCE COPY ☐ CONSTRUCTION

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scale 1 : 260 designed by Badri Vishal
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