PROJECT : NIMBUS THE EXPRESS PARK VIEW-II, PLOT NO- GH-03, SECTOR - CHI-V , GREATER NOIDA, (U.P)

RAIN WATER HARVESTING CALCULATION

Plot Size	=	52493 SqM
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 90mm / hr
Peak Rainfall in 15 minutes, R	=	90 / 4 mm
	=	22.5 mm =.0225m
Say	=	0.025 m.
Total Roof area, A	=	11785 sq.m.
Average run off coefficient, C	=	0.85
Hence total combined capacity of desilting tank and recharge pit required,	=	AxRxC
	=	250
Providing Desilting tank of size	=	5 x 2 x 2 m. effective depth
Capacity of desilting tank of given size (Cu.m.), a	=	20
Providing Recharge pit of size	=	2 x 2 x 3 m. effective depth
Capacity of recharge pit of given size (Cu.m.), b	=	12
Hence total combined capacity of one set of desilting tank and recharge pit, (Cu M)	=	a+b
	=	32
Therefore no. of desilting tank and recharge pit required	=	(AxRxC) / (a+b)
	=	7.826 nos.
Say,	=	8
Hence, 8 sets of rechrge pit and desilting tank are required of following size :		

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DESIGN OF DRAIN LINE -PHASE-1

Rainfall intensity (I)		=	25	mm/hour
Coefficient of Runoff (C)		=	0.50	
Area of Drainage district		=	3.00	Hectare
Total Site Discharge	= 10*C*I*A	=	375	Cu M / Hour
		or	104.17	Lit/sec
Drain Pipe Design				
Final Drain Pipe Dia Selected		=	450	mm
Slope (1 in ...)		=	750	

Drain Design as per Manning Formula

$$V = \frac{38 \times 10^{-3} \times D^{2/3} \times S^{1/2}}{n}$$

V = 0.77 m/sec

D	= Dia (mm)	=	450	mm
S	= Slope	=	750	
n	= Manning Coeficien	=	0.011	
V	= Velocity (m/sec)			
Actual Pipe Capacity (Q)	= $\frac{\Pi D^2 \times V}{4}$			
	= 0.122956	m^3/sec		
Q	= 122.96	Lit/sec		
Where -				
D	= Dia (mm)	=	450	mm
V	= Velocity (m/sec)	=	0.77	
Q	= Pipe Capacity (at full flow) m3/sec			
Total Site Discharge		=	104.17	Lit/sec
Actual Pipe Capacity at 100% flow		=	122.96	Lit/sec

Total Site discharge is less the pipe capacity, hence 450 mm Pipe Dia is OK

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DESIGN OF DRAIN LINE -PHASE-2

Rainfall intensity (I)		=	25	mm/hour
Coefficient of Runoff (C)		=	0.50	
Area of Drainage district		=	2.30	Hectare
Total Site Discharge	= 10*C*I*A	=	288	Cu M / Hour
		or	79.86	Lit/sec
Drain Pipe Design				
Final Drain Pipe Dia Selected		=	400	mm
Slope (1 in ...)		=	600	

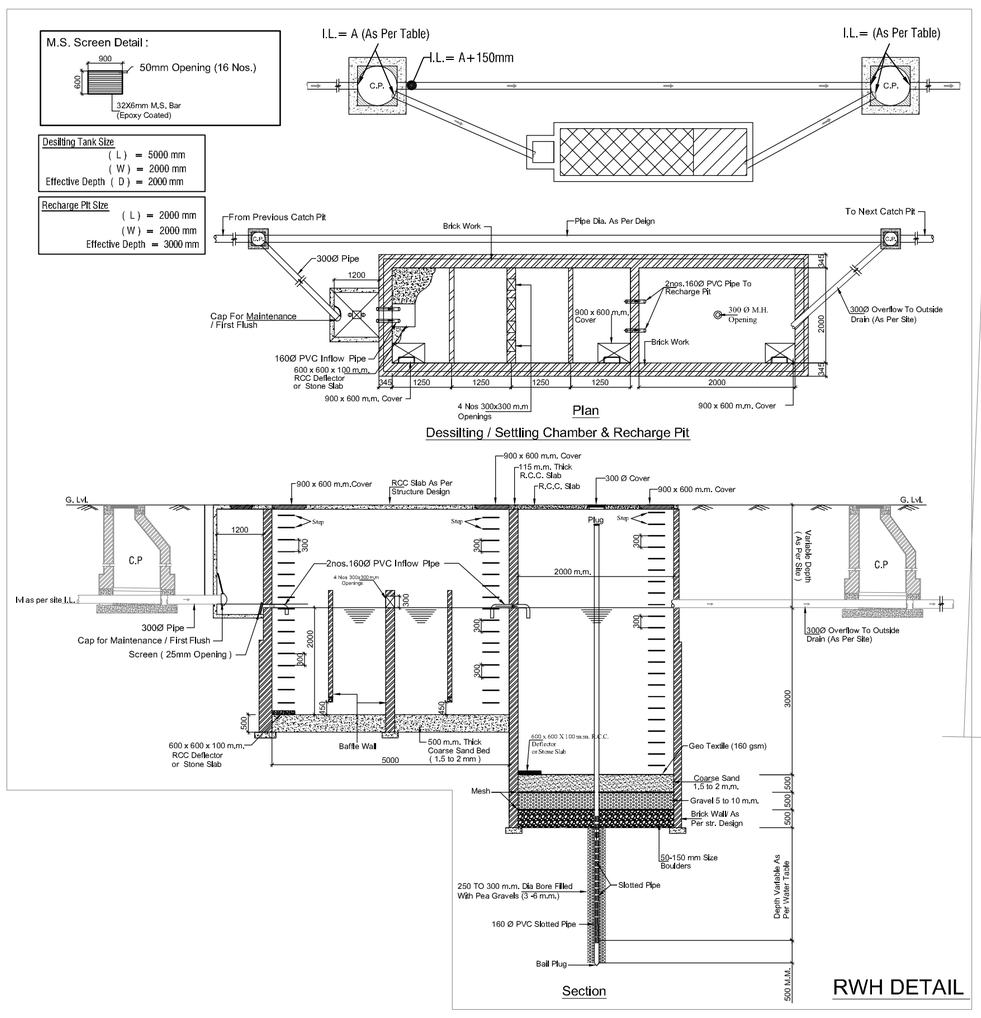
Drain Design as per Manning Formula

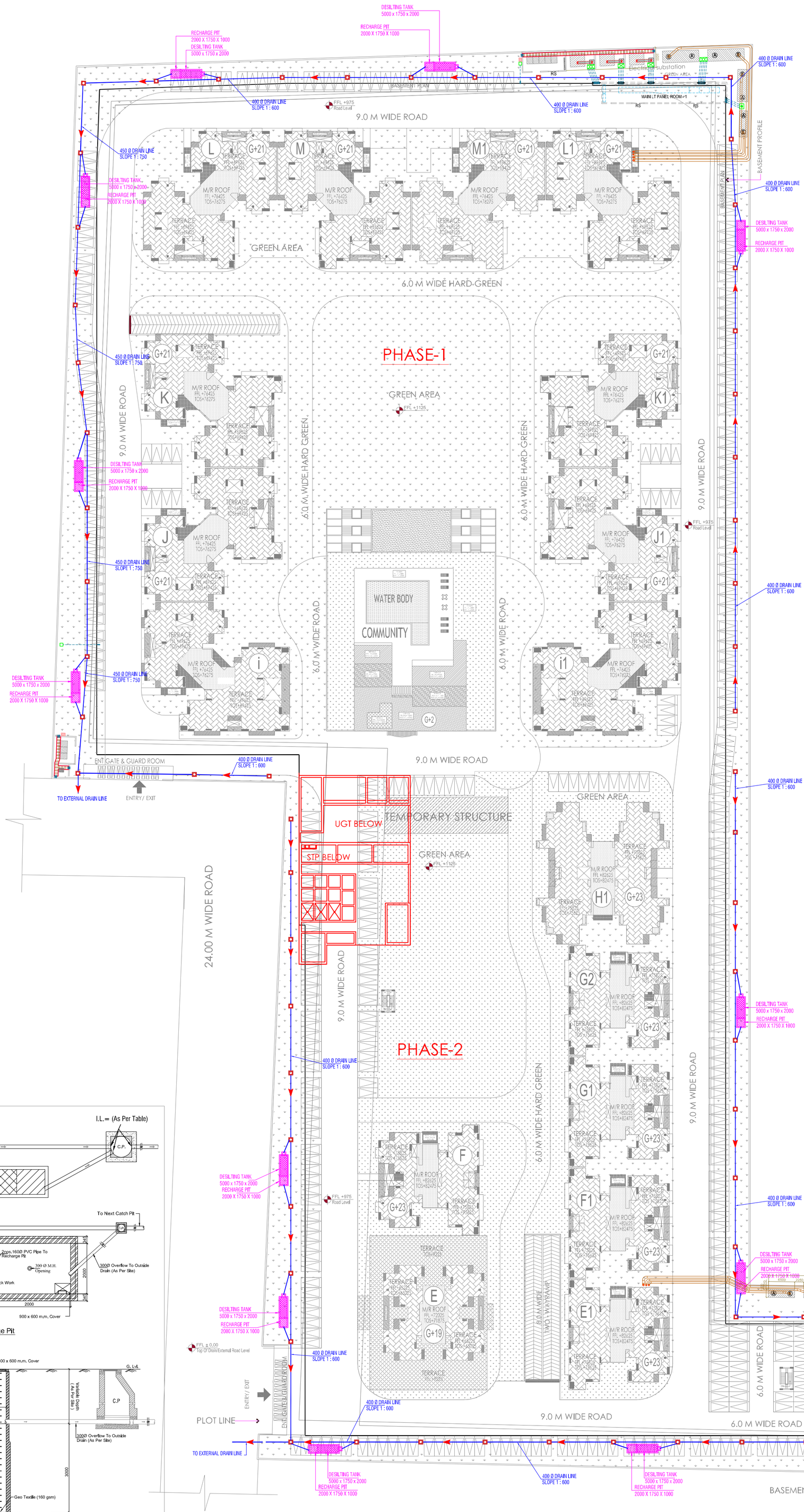
$$V = \frac{38 \times 10^{-3} \times D^{2/3} \times S^{1/2}}{n}$$

V = 0.80 m/sec

D	= Dia (mm)	=	400	mm
S	= Slope	=	600	
n	= Manning Coeficien	=	0.011	
V	= Velocity (m/sec)			
Actual Pipe Capacity (Q)	= $\frac{\Pi D^2 \times V}{4}$			
	= 0.100415	m^3/sec		
Q	= 100.42	Lit/sec		
Where -				
D	= Dia (mm)	=	400	mm
V	= Velocity (m/sec)	=	0.80	
Q	= Pipe Capacity (at full flow) m3/sec			
Total Site Discharge		=	79.86	Lit/sec
Actual Pipe Capacity at 100% flow		=	100.42	Lit/sec

Total Site discharge is less the pipe capacity, hence 400 mm Pipe Dia is OK





S. No.	SYMBOL	DESCRIPTION
1.	C.P.	CATCH PIT
2.		UNDER GROUND DRAIN
3.		DESILTING TANK
4.		RECHARGE PIT
5.		BASEMENT LINE

Key Plan–EXPRESS PARK VIEW–II

NOTE:- ALL DIMENSION & LEVELS ARE IN MM.

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OWNER SIGNATURE :

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CLIENT :

JOB TITLE :

SUBMISSION DRAWING

PROJECT :

THE EXPRESS PARK VIEW-II
PLOT NO- GH-03, SECTOR - CHI-V,
GREATER NOIDA, (U.P)

DRAWING TITLE :

EXTERNAL DRAINAGE SYSTEM

JOB NO. 2064	DRAWING NO.
SCALE :- 1 : 500	EPV/EX.D/PL-03
DATE : 10.07.2015	REVISION NO.
DEALT - Kulwant	CHECKED BY : Anand Havelia

GREATER NOIDA AUTHORITY :-

ASSOCIATE ARCHITECT | ARCHITECT | CHIEF ARCHITECT