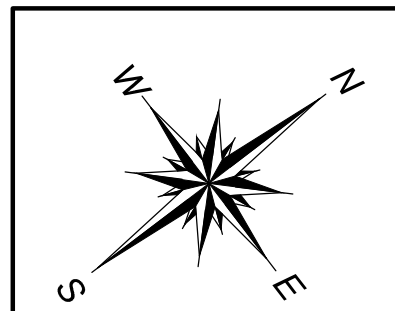


LEGEND :		
S.No.	SYMBOL	DESCRIPTION
1.	M.H.	MANHOLE
2.	SEWER LINE	SEWER LINE
3.	BASEMENT RETAINING WALL	BASEMENT RETAINING WALL
4.	F.L.	FORMATION LEVEL
5.	I.L.	INVERT LEVEL
6.	C.L.	CONNECTION LEVEL

DESIGN OF SEWER LINE			
Population			
Permanent Population (Shopping)		=	60 Persons
Transient Population (Shopping)		=	500 Persons
Banquet / Conference / Hotel		=	2,890 Persons
Activity		=	490 Persons
Restaurant		=	260 Persons
Service Apartments & Guest Rooms		=	13 Persons
Floating Population (Apartment & Guest Rooms)		=	13 Persons
Staff (Apartment & Guest Rooms)		=	13 Persons
Total Water Demand (Domestic Fresh Water)			
Permanent Population (Shopping)	@ 25 lpcd	=	1,500 Liters
Transient Population (Shopping)	@ 5 lpcd	=	2,500 Liters
Banquet / Conference / Hotel		=	14,450 Liters
Activity	@ 5 lpcd	=	26,950 Liters
Restaurant	@ 55 lpcd	=	10,000 Liters
Kitchen		=	23,400 Liters
Service Apartments & Guest Rooms	@ 90 lpcd	=	65 Liters
Floating Population (Apartment & Guest Rooms)	@ 5 lpcd	=	325 Liters
Staff (Apartment & Guest Rooms)	@ 25 lpcd	=	15,000 Liters
Filter Backwash		=	1,000 Liters
Makeup Water for Water Body		=	95,190 Liters
Total Water Demand (Recycle Water)			
Permanent Population (Shopping)	@ 20 lpcd	=	1,200 Liters
Transient Population (Shopping)	@ 10 lpcd	=	5,000 Liters
Banquet / Conference / Hotel	@ 10 lpcd	=	28,900 Liters
Activity	@ 15 lpcd	=	7,350 Liters
Restaurant	@ 45 lpcd	=	11,700 Liters
Service Apartments & Guest Rooms	@ 10 lpcd	=	130 Liters
Floating Population (Apartment & Guest Rooms)	@ 10 lpcd	=	260 Liters
Staff (Apartment & Guest Rooms)	@ 20 lpcd	=	3,409 Liters
AC Makeup Water		=	1,12,949 Liters
Horticulture		=	
Flow to Sewer (Domestic Fresh Water) By taking Interception factor			
Flow to Sewer (Domestic Fresh Water) By taking Interception factor	@ 80%	=	63,352.0 Lit/day
Flow to Sewer (Recycle Water) By taking Interception factor	@ 100%	=	69,540.0 Lit/day
Hence Total Sewage Load		=	1,32,892 Lit/day or 1.54 Lit/sec
By taking Peak Factor	@ 3	=	4.61 Lit/sec
Peak Sewage Generated (3 times of Avg. Flow)		=	
Sewer Pipe Design			
Final Sewage Pipe Dia Selected		=	200 mm
Slope (1 in ...)		=	200
Sewer Design as per Manning Formula			
$V = \frac{3.988 \times 10^{-3} \times D^{2/3} \times S^{1/2}}{n}$			
$V = \frac{0.96 \text{ m/sec}}{n}$			
D = Dia (mm)	=	200 mm	
S = Slope	=	200	
n = Manning Coefficient	=	0.01	
V = Velocity (m/sec)	=		
Actual Pipe Capacity (Q) at 100% flow			
$Q = \frac{\pi D^2 \times V}{4}$			
Where -			
D = Dia (mm)	=	200 mm	
V = Velocity (m/sec)	=	0.96	
Q = Pipe Capacity (at full flow)	=		
Peak Sewage Generated (site peak discharge)	=	4.61 Lit/sec	
Actual Pipe Capacity at 100% flow	=	30.13 Lit/sec	
Site peak discharge is less than 50% of pipe capacity, hence 200 mm Pipe Dia is OK			

rev. no.	date	revision
..	..	..
project		
"MANGAL HEIGHTS"		
PROPOSED HOTEL COMPLEX		
AT KHASRA No. 1069, N.H. 58		
VILLAGE :- NOORNAGAR, GHAZIABAD.		
title		
LAYOUT PLAN		
subtitle		
EXTERNAL SEWERAGE SYSTEM		
drawing released for		
☐ APPROVAL	☒ MUN. SUBMISSION	
☐ ADVANCE COPY	☐ CONSTRUCTION	
drg. no.	MH / 16B02 / ESS - 01	drawn by Prem Saini
scale	1 : 175	designed by Badri Vishal
date	12.06.2018	checked by Anand Havelia
architects		
Space Designers International		
B - 34, SECTOR-67, NOIDA		
PH : +91 9711633717, 18, 19 & 20, Mob: 9811070399, 9811336231		
e-mail : spacesdi@gmail.com, www.spacedi.com		
services consultant		
Consummate Engineering Services (P) Ltd.		
Noida Office : B - 67, Sector - 67, Noida - 201 301		
Lko. Office : R 006, Rohas Plumeria, Gomti Nagar, Lucknow		
Tel : (0120) 6613500 (32 Lines)		
e mail : mail@cespl.in, website : www.cespl.in		