



U.G. TANK & PUMP HOUSE
DOMESTIC. 490 KL
FIRE. 570 KL
TOTAL CAP. 1060 KL

SEWAGE TREATMENT PLANT
TOTAL CAP. - 690 KLD

PROJECT : PROPOSED ARIHANT GROUP HOUSING AT SECTOR-22D, GH-11, YEDA

DESIGN OF SEWER LINE

Population

Total No. of Apartments	=	1,028 Nos.
Total Permanent Population @ 4.5	=	4,626 Persons
C.A.D & Floating Population	=	3,382 Persons
Staff	=	240 Persons

Total Water Demand

Apartments @ 135 lpcd	=	6,24,510 Liters
Club & Floating @ 15 lpcd	=	50,730 Liters
Staff @ 45 lpcd	=	10,900 Liters
Total Water Demand	=	6,86,040 Liters

By taking Interception factor @ 90%

Hence Total Sewage Load = 6,17,436 Lit/day or 7.15 Lit/sec

By taking Peak Factor @ 3

Peak Sewage Generated (3 times of Avg. Flow) = 21.44 Lit/sec

Sewer Pipe Design

Final Sewage Pipe Dia Selected = 300 mm
Slope (1 in ...) = 350

Sewer Design as per Manning Formula

$$V = \frac{3.988 \times 10^{-2} \times D^{0.55} \times S^{0.54}}{n}$$

$V = 0.86 \text{ m/sec}$

$D = \text{Dia (mm)} = 300 \text{ mm}$
 $S = \text{Slope} = 350$
 $n = \text{Manning Coefficient} = 0.011$
 $V = \text{Velocity (m/sec)}$

Actual Pipe Capacity (Q) at 100% flow = $\frac{\pi D^2 \times V}{4}$
 $Q = 0.061048 \text{ m}^3/\text{sec} = 61.05 \text{ Lit/sec}$

Where
 $D = \text{Dia (mm)} = 300 \text{ mm}$
 $V = \text{Velocity (m/sec)} = 0.86$
 $Q = \text{Pipe Capacity (at full flow) m}^3/\text{sec}$

Peak Sewage Generated (site peak discharge) = 21.44 Lit/sec
 Actual Pipe Capacity at 100% flow = 61.05 Lit/sec
 Site peak discharge is less than 50% of pipe capacity, hence 300 mm Pipe Dia is OK

Rev. No.	Date	Revision

Project :
ARIHANT GROUP HOUSING
AT SECTOR - 22D GH-11, YEDA

Title :
LAYOUT PLAN

Subtitle :
EXTERNAL SEWERAGE SYSTEM

Drawing Released For :

APPROVAL SUBMISSION
 ADVANCE COPY CONSTRUCTION

Drg. No. : Arihant 22D / ES-01

Scale : 1:475 **Drawn By :** Amit Kamboj

Date : August 2025 **Design By :** Sanjay Goel

Ckd By : Arand Havelia

Architects :

VISHAL SHARMA ARCHITECT
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For ARIHANT URBAN SPACE PVT. LTD.
Authorised Signatory

LEGEND :

S. No.	SYMBOL	DESCRIPTION
1.	M.H.	MANHOLE
2.	—	SEWER LINE
3.		
4.		

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