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Project –Rukmani Vihar (Mathura)

External Water Supply System of Rukmani Vihar, Mathura

Prepared By:

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1 Details of project

S.No.	Details of the Colony	Slum development on the river bank Yamuna at Mathura
1.	Name of the Colony	Rukmani Vihar
2.	House Holds	
3.	Population	22295
4.	Covered Area	530000 Sq m
5.	Services Available / Proposed	
a	Roads	yes
b	Water supply	Water supply from overhead tank
c	Sewer line	Sewer discharge
d	Drainage line	To discharge the storm water
e	Electric Sub Station	yes
f	Street lights	yes
g	Tele Communication Network	yes
h	Community Centers	Yes
i	Railway Station	No

Description of works proposed for Water supply & Technical Designs for Works.

2.1 Water Demand

Designed for No of Houses/ population	Total Water Demand MLD	Over head Storage in KL
23000 persons	3.0175	1500 KL 20 M STAGING LEVEL OF 192

I. Distribution system design: the distribution system has been designed by the using Darcy-Weisbach Calculation method with Colebrook-White Friction Factor equations.
II. Pressure balances accurate to: 0.500010 bar
III. Pressure balances accurate to: 5.108901 m.hd
IV. Largest Resistance Loss balanced is: 32.838422 m.hd
(Across any single pressure equation for a pipe loop or end to end section)
V. Pressure balances accurate to within 15.557693%
(Of the Largest Resistance Loss across any single pressure equation)
VI. Configuration:
VII. Pipes: 109
VIII. Tanks: 2
IX. Demand Pressures at discharge point : 10 m

Flow Demands Out: 6444.07l/min

X. Lowest Pressure at any node is: 0.587222 bar
XI. Highest Pressure at any node is: 2.630718 bar
XII. Lowest Elevation of any node is: 0 m (NGL)
XIII. Highest Elevation of any node is: 21 m from NGL

3 Design factor for Distribution system:

1. Peak Factor - 3.5
2. Demand : 135 LPCD
3. Population 22295 estimated as per unit and FAR
4. Pressure requirement : 10 m at discharge point

4 Requirement of pipeline& specifications:

As per manual on water supply and treatment, third edition and updated (May 1999) by Central public Health and environmental Engineering Organization (CPHEEO)- Ministry of Urban Development New Delhi

Nominal size Diameter (ID)in MM	**Length in M**
250 PVC ; IS 4985-1988 10 Kg/ Cm ^{2}to be lay in accordance with IS 7634: 1975	355.7
200 PVC ; IS 4985-1988 10 Kg/ Cm ^{2}to be lay in accordance with IS 7634: 1975	151.5
150 PVC; IS 4985-1988 10 Kg/ Cm ^{2}to be lay in accordance with IS 7634: 1975	1228.2
100 PVC; IS 4985-1988 10 Kg/ Cm ^{2}to be lay in accordance with IS 7634: 1975	3316.4
80 PPR IS MARKED ONLY IS 15801-2009; PN-16; to be lay in accordance with applicable IS code	3411.2
65 PPR IS MARKED ONLY IS 15801-2009; PN -16; to be lay in accordance with applicable IS code	938.9
50 PPR IS MARKED ONLY IS 15801-2009; PN -16; to be lay in accordance with applicable IS code	1747.4
Total Length	11149

Design of thrust block

Design of Thrust block at change in alignment up to 90 degree
At BC of soil 10 T /Sq m

Nominal Pipe Size	Outside Diameter	width of block	Height of block	Length of block
(inches)	*(inches)*	*m*	*m*	*m*
				PVC
2	2.375	0.4	0.4	0.6
2 1/2	2.875	0.4	0.4	0.7
3	3.5	0.4	0.4	0.7
4	4.5	0.4	0.4	1.2
6	6.625	0.45	0.45	2.1
8	8.625	0.5	0.5	3.2
10	10.75	0.55	0.55	4.4

Reinforcement required: 10 mm bar at 200 mm c/c

5 Suggested supply pattern

As per manual on water supply and treatment, third edition and updated (May 1999) by Central public Health and environmental Engineering Organization (CPHEEO)- Ministry of Urban Development New Delhi

It is recommended to have water supply pattern as follows

SUPPLY TIME IN HRS	SUPPLY QUANTITY BY O.H.T	Supply at 200 KL/HR to O.H.T
05- 09 HR	1500 KL	800 KL
12- 14 HR	600 KL	1000 KL
18-20 HR	900 KL	1200 KL

Capacity of pump Minimum 200 KL per hr @ Level of 26 m from NGLTo OHT