

L O O P

Version 4.0

## Looped Water Distribution Network Design Program

LOOP: Looped Water Distribution Design Program - (C) The World Bank

Output Data File : BPRUIDSZ.OUT

Echoing Input Design Variables

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Title of the Project           : uidssmt bpr zone3
Name of the User              : otd
Number of Pipes               : 26
Number of Nodes               : 21
Type of Pipe Materials Used   : DI/
Number of Commercial Dia per Material : 7/
Peak Design Factor            : 3
Newton-Raphson Stopping Criterion lps : .001
Minimum Pressure              m   : 4
Maximum Pressure              m   : 45
Design Hydraulic Gradient m in km : 2
Simulate or Design?          (S/D) : D
No. of Res. Nodes with Fixed HGL : 1
No. of Res. Nodes with Variable HGL :
No. of Booster Pumps         :
No. of Pressure Reducing Valves :
No. of Check Valves          :
Type of Formula               : Hazen's

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## Looped Water Distribution Network Design OutPut

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BandWidth                    =      2
Number of Loops               =      6
Newton Raphson Iterations =      2
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## Pipe Details

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=====
Pipe  From To   Flow   Dia   HL   HL/1000m  Length Velocity
No.  Node Node  (lps) (mm)  (m )  (m )      (m )  (m/s )
-----
  1    1   6    34.020 250.0  1.29   1.85    697.00  0.69
  2    1   2     6.450 150.0  0.15   1.02    151.00  0.36
  3    2   5     2.640 100.0  0.50   1.41    351.00  0.34
  4    2   3     2.400 100.0  0.18   1.18    149.00  0.31
  5    3   4     1.200  80.0  0.28   1.81    155.00  0.24
  6    6   8    20.551 200.0  0.43   2.16    197.00  0.65
  7    6  20    12.059 150.0  0.97   3.26    296.00  0.68
  8   20   7     9.824 150.0  0.34   2.23    153.00  0.56
  9   20  21     1.545  80.0  0.28   2.89     96.00  0.31
 10    7  21    -0.135  50.0 -0.06  -0.31    205.00 -0.07

```

11	7	9	9.269	150.0	0.20	2.01	101.00	0.52
12	8	9	3.772	100.0	1.09	2.73	397.00	0.48
13	8	10	13.688	150.0	0.85	4.13	205.00	0.77
14	10	11	2.691	100.0	0.59	1.46	402.00	0.34
15	10	12	9.588	150.0	0.42	2.13	198.00	0.54
16	12	13	8.178	150.0	0.48	1.59	304.00	0.46
17	13	16	0.197	50.0	0.07	0.63	105.00	0.10
18	11	16	12.702	150.0	0.38	3.59	107.00	0.72
19	16	17	9.630	150.0	0.39	2.15	180.00	0.54
20	13	14	4.710	100.0	0.72	4.12	175.00	0.60
21	14	17	-1.569	80.0	-0.27	-2.98	90.00	-0.31
22	14	15	3.669	100.0	1.03	2.60	397.00	0.47
23	17	18	4.311	100.0	1.58	3.50	451.00	0.55
24	15	18	0.399	50.0	0.28	2.33	120.00	0.20
25	18	19	1.890	80.0	0.66	4.20	158.00	0.38
26	9	11	12.172	150.0	0.35	3.32	105.00	0.69

Note: Negative value indicates the flow in reverse direction in that Pipe  
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Pipe Pressure Details  
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Pipe No.	From Node	To Node	Dia (mm)	Hazen's Const	Pipe Material	Max Press (m )	Allow Press (m )	Status (E/P)
1	1	6	250.0	140.00000	DI	5.86	125.00	
2	1	2	150.0	140.00000	DI	4.05	125.00	
3	2	5	100.0	140.00000	DI	15.60	125.00	
4	2	3	100.0	140.00000	DI	5.62	125.00	
5	3	4	80.0	100.00000	DI	8.29	100.00	
6	6	8	200.0	140.00000	DI	9.53	125.00	
7	6	20	150.0	140.00000	DI	16.94	125.00	
8	20	7	150.0	140.00000	DI	16.94	125.00	
9	20	21	80.0	100.00000	DI	17.52	100.00	
10	7	21	50.0	100.00000	DI	17.52	100.00	
11	7	9	150.0	140.00000	DI	17.55	125.00	
12	8	9	100.0	140.00000	DI	17.55	125.00	
13	8	10	150.0	140.00000	DI	11.74	125.00	
14	10	11	100.0	140.00000	DI	18.10	125.00	
15	10	12	150.0	140.00000	DI	13.52	125.00	
16	12	13	150.0	140.00000	DI	15.58	125.00	
17	13	16	50.0	100.00000	DI	18.22	100.00	
18	11	16	150.0	140.00000	DI	18.22	125.00	
19	16	17	150.0	140.00000	DI	18.22	125.00	
20	13	14	100.0	140.00000	DI	16.06	125.00	
21	14	17	80.0	100.00000	DI	17.73	100.00	
22	14	15	100.0	140.00000	DI	16.06	125.00	
23	17	18	100.0	140.00000	DI	19.00	125.00	
24	15	18	50.0	100.00000	DI	19.00	100.00	
25	18	19	80.0	100.00000	DI	20.09	100.00	
26	9	11	150.0	140.00000	DI	18.10	125.00	

Node Details

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=====
Node      Flow      Elev.      H G L      Pressure
No.      (lps)      (m )      (m )      (m )
-----
 1 S      40.470     30.50     31.50     1.00
 2        -1.410     27.30     31.35     4.05
 3        -1.200     25.55     31.17     5.62
 4        -1.200     22.60     30.89     8.29
 5        -2.640     15.25     30.85     15.60
 6        -1.410     24.35     30.21     5.86
 7        -0.690     13.75     28.90     15.15
 8        -3.090     20.25     29.78     9.53
 9        -0.870     11.15     28.70     17.55
10        -1.410     17.20     28.94     11.74
11        -2.160     10.25     28.35     18.10
12        -1.410     15.00     28.52     13.52
13        -3.270     12.45     28.03     15.58
14        -2.610     11.25     27.31     16.06
15        -3.270     10.25     26.28     16.03
16        -3.270     9.75      27.97     18.22
17        -3.750     9.85      27.58     17.73
18        -2.820     7.00      26.00     19.00
19        -1.890     5.25      25.34     20.09
20        -0.690     12.30     29.24     16.94
21        -1.410     11.45     28.97     17.52
=====

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Output Data File : BPRUIDSZ.OUT

Pipe Cost Summary

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=====
Diameter  Pipe      Length      Cost      Cum. Cost
(mm)      Material  (m )      (1000 Rs ) (1000 Rs )
-----
 50.0     DI        430.00     104.34     104.34
 80.0     DI        499.00     204.88     309.21
100.0     DI       2322.00     2153.21     2462.43
150.0     DI       1800.00     2419.61     4882.04
200.0     DI        197.00     380.73     5262.77
250.0     DI        697.00     1807.50     7070.27
=====

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Pipe-wise Cost Summary

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=====
Pipe Diameter  Pipe      Length      Cost      Cum. Cost
No      (mm)      Material  (m )      (1000 Rs ) (1000 Rs )
-----
 1      250.0     DI        697.00     1807.50     1807.50

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2	150.0	DI	151.00	202.98	2010.48
3	100.0	DI	351.00	325.49	2335.97
4	100.0	DI	149.00	138.17	2474.14
5	80.0	DI	155.00	63.64	2537.78
6	200.0	DI	197.00	380.73	2918.51
7	150.0	DI	296.00	397.89	3316.40
8	150.0	DI	153.00	205.67	3522.07
9	80.0	DI	96.00	39.42	3561.48
10	50.0	DI	205.00	49.74	3611.22
11	150.0	DI	101.00	135.77	3746.99
12	100.0	DI	397.00	368.14	4115.13
13	150.0	DI	205.00	275.57	4390.70
14	100.0	DI	402.00	372.78	4763.48
15	150.0	DI	198.00	266.16	5029.63
16	150.0	DI	304.00	408.65	5438.28
17	50.0	DI	105.00	25.48	5463.76
18	150.0	DI	107.00	143.83	5607.59
19	150.0	DI	180.00	241.96	5849.55
20	100.0	DI	175.00	162.28	6011.83
21	80.0	DI	90.00	36.95	6048.78
22	100.0	DI	397.00	368.14	6416.92
23	100.0	DI	451.00	418.22	6835.14
24	50.0	DI	120.00	29.12	6864.26
25	80.0	DI	158.00	64.87	6929.13
26	150.0	DI	105.00	141.14	7070.27
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