

Review Report

Paper Title: Design of 24x7 Water Supply Systems – A Case Study: Ahmadabad City

Authors: Swarup Varu, Dipsha Shah

Conversion of existing intermittent mode of operation to continuous (24x7) mode requires ascertaining: (1) adequacy of water at the source; (2) adequacy of the network components to deliver desired quantity of water at required pressure; (3) effective operation and maintenance to minimize operational cost and leakages; and (4) proper water tariff, billing and collection system for self-sustenance of the water supply system. Even though consumer demands may be met in intermittent mode of water supply, the main disadvantages of intermittent mode as mentioned by authors also are: (1) Possibility of contaminant intrusion when pipeline is not under pressure; (2) Coping costs at households towards storage facilities, pumping of water, and household treatment facility; and (3) Possibility of contamination at individual storage tanks. The authors emphasized on design of 24x7 WSS in the case study presented by them. I have several points for the authors to address in the manuscript.

1. Residual pressure at different nodes is observed to vary between 7 to 30 m in both Sabarmati and Old Wadaj Ward. The residual pressure of 7 m may not be sufficient for supply of water directly to consumers located on second and higher floors. Why the network is not designed for higher residual pressures to reduce coping cost?
2. Section III – Case Study: It is only after reading the 4th paragraph of this section, I found that Case Study of Malkapur is conceptualized, designed by implemented by Maharashtra Jeevan Pradhikaran and authors were not involved with that study. Reference from where data and results have been reported should be provided at appropriate location in the text.

What is the necessity of last line in the fourth para? What are those towns referred by “other towns”? What are the problems faced by other towns while implementing the scheme through private expertise? The present study by the authors also involves implementation under PPP mode!

3. Section IV – Study and Findings: Study findings should be supported with data using performance indicators like hours of supply; per capita supply; residual pressure, leakage and other losses; frequency of supply; mode of charging, expenditure and recovery, etc. of existing system. The last para about information on software used should be shifted in next section.
4. Section V – Data Collection and Design: This section should include important design criteria. Also, include whether Darwin Designer is used to get optimized sizes, or the same have been obtained by trial and error method. How the existing pipes have been considered in design? How the design can inform that 85% of existing pipes is to be replaced? What is the criterion used for pipe replacement? On what basis option of strengthening the network by parallel pipes is ignored? Figures 3 and 4 do not depict anything about three technical possibilities of implementation.

5. Section VI – Cost Analysis Scenario: Would it not be better to consider strengthening of existing network as one of the alternative? How option 3, which is the costliest, is advantageous from social, environmental and sustainable point of view? HDPE pipes as well as trenchless technology have their own disadvantages. Do the authors recommend such an alternative for all cities willing to change to 24x7 mode of water supply?
6. What is meant by public share? If I am not wrong, it is to be contributed by local body. If it is so, where is PPP?
7. There seems to be something wrong in presentation in Table 2. Is O&M cost proposed to be collected annually or onetime cost? What is the period of analysis considered for obtaining average water charges? How increase in household over period of design is accounted? How the cost is capitalized? Why the total sum is not correct? What is the meaning of recovery? Is it that full cost is recovered? No analysis for payback period is provides. How it can be considered short period.
8. Any project can be shown economically viable by deciding high tariff. Was there any study carried out for “Willingness to pay” for better services. Many apartments type of building have several households with single connection. How the tariff is decided for them?
9. Suggesting replacement of 85% of existing pipes by new pipes irrespective of age and condition of pipes as solution for design of 24x7 system cannot be accepted by any local body.

The paper is poorly written and provides nothing new as far as design is concerned. Even I don't feel anything worth documenting and useful for readers. Further, authors' suggestions have severe drawback. Pressure management, leakage control, reliability of the system are some of the concerns that need to be considered while designing 24x7 system.