

Service Connections – A Neglected Area

K. G. Dave *

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1.0 Introduction:

- 1.1 The basic purpose of a water supply system is to deliver water of acceptable quality in adequate quantity to the consumer. In the beginning of a water system there is the source of water and at the end of it, there is the service connection. Service connection is like an umbilical cord between system and the consumer.
- 1.2 In the total quantity of water supplied through a system, there is always a component known as 'unaccounted for water' (UFW), which includes system losses, drawal by illegal connections and leakages from distribution system. In many Indian cities, UFW is found to vary from 40 to 60 percent that is very high from international standards. It is obvious that there will always be some UFW in any system. UFW between 10 to 15 % is considered acceptable. When it reaches 20%, some remedial measures are called for. UFW beyond 20% is unacceptable. It should be realized that the water leaking out from a distribution system is precious because it has been pumped and treated to potable standards. Restricting UFW within acceptable limits requires continuous leak detection and control programme as a part of normal O and M.
- 1.3 In leak detection surveys carried out in various Indian cities, it is found that on an average, 50% of total leakage is found to take place through service connections and that to mainly from ferrule joint. Service connection individually being a very small work is left to the plumbers and is the least supervised component of the system. If the house service connection component of a system is improved upon by standardization, better materials, adequate supervision and periodical surveys, considerable quantity of potable water can be saved. The effort will be self-paying because of increased revenue out of saved water and by postponement of new projects due to availability of extra quantity of water.

2.0 The existing system of service connection:

- 2.1 House service connections are with the local body that is responsible for operating the water supply system. The house service connection consists of two parts: (1) Service pipe from distribution pipeline to the property line and (2) plumbing within the property. The work of part (1) is generally carried out by the local body either by themselves or through registered plumbing contractor. In various local bodies systems with marginal variations are followed based on their byelaws. Of course the material required has to be provided by the consumer conforming to the prescribed specifications of the local body. The consumer, in most cases, is required to bear the entire cost of the connection.

3.0 Reasons for leakages from service connection:

- 3.1 The work of individual service connection is too small from cost point of view. It is, therefore, left to the plumber and there is virtually no supervision or checking as regards the quality of the work. The work of new connection that is generally done during non-supply hours is immediately covered up in most cases without checking it for leakage during supply hours.
- 3.2 The service pipe is laid at very shallow depth and is subjected to vibrations due to traffic on the road surface. These vibrations are continuously transmitted to the ferrule that gets loosened at the threaded joint leading to leakage. With passage of time, the leakage increases due to further loosening of the threads. If the distribution pipe is non-metallic and connection is made without a metallic saddle-piece, the threads in the distribution pipe get damaged quickly and lead to early leakage. Damaged threads in a non-metallic pipe are not repairable.
- 3.3 Many a times it is observed that service connection is given without even ferrule. Service pipe is directly threaded into the distribution pipeline for various reasons. This practice enhances the degree of vibrations transmitted.
- 3.4 Service pipes get corroded soon and cause leakages. There is no formal periodical inspection system in place and therefore the leakages from service pipes continue for a long time.
- 3.5 All such and similar reasons collectively lead to enormous leakage of precious potable water from service connection.

4.0 Suggested remedies:

- 4.1 A standard method and drawing for giving house service connection should be made available at the time of giving permission for a new connection. Details like fittings to be provided, minimum depth, sizes, etc. should be clearly shown.
- 4.2 A responsible officer should visit site, verify the materials to be used, location of the connection, etc. After his clearance only the work should be started.
- 4.3 After completing the work of connection, the excavated pit should be kept open and the officer should check the connection personally during supply hours for any leakage. He should then certify the work as complete and then only the connection pit should be covered.
- 4.4 A regular system of inspection should be in place. Any connection older than five years must be inspected for the condition of service pipe and any leakage. If found necessary, rectification by changing the pipe and / or stopping the leakage should be

done immediately. Such periodical inspections of service connections will enable detection of unauthorized tapplings and tempering with water supply system as side benefits. Such inspections will be a deterrent for such unlawful activities.

4.5 Even number of service connections per unit length of distribution pipe of a particular diameter has to be restricted. Too many holes, too close can weaken the distribution pipe that can crack or break leading to leakage.

5.0 Conclusions:

- (1) House service connections in a distribution system are a potential area for water loss by way of leakages. This fact should be accepted and adequate measures should be taken to control the same.
- (2) Some research work in this insignificant but important area is required to develop some standards for service connections with focus on leakage reduction and control over a long period.
- (3) To reduce vibrations of ferrule connection transmitted through service pipe, possibility of a flexible connection between service pipe and ferrule should be explored.
- (4) Standards for number of connections per unit length of a particular diameter of distribution pipe should be laid down and incorporated in byelaws.
- (5) System of periodical inspections by way of ward-wise surveys should be established.
- (6) It should be realized that saving of potable water is much cheaper than going for a new project for augmentation of the existing system.
- (7) Water conservation is an unavoidable long-term goal for all and this will be a right step in that direction.