

## REVIEW ON REDESIGN OF TRADITIONAL OPEN CANAL SYSTEM INTO CLOSED CONDUIT SYSTEM OF SHETPHAL MEDIUM CANAL PROJECT

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**ABSTRACT-** This paper deals with the water distribution methods of canal irrigation and their social implications. The availability of water of water resources is limited in space and time. It was also seen that the water is stolen by the people's results in ineffective irrigation system. The Pipe Distribution Network system is one of the best possible alternatives to overcome the limitations of conventional gravity flow Canal Distribution Network system. But it was found that there is a loss of water due to evaporation, percolation and theft. It also includes study of different irrigation system like sprinkler, flow, drip irrigation and suggesting the system as per crop pattern and water requirement. This paper includes information about closed conduit canal system of water distribution. It includes advantages of pipe distribution network over the open canal water supply system.

### I. INTRODUCTION

The irrigation system consists of intake or pumping station, water conveyance system, water distribution system, field application system, and a drainage system. The open canal system is used to carry water from place to place. The distributaries required to carry water from main pipe to the one or more farms. The canal construction required more amount of cutting of earth material due to topography of ground.

The open canal system is need to be improve or just by replacing it with closed conduit system we can save water in more quantity. Also to provide sufficient amount of water for irrigation and industrial purpose we have to provide closed conduit canal system. Water is most important natural source because there is less amount of water availability in summer season or in drought season. By using open canal distribution system

the water loss is occurred in the form of percolation, evaporation etc. but by using closed conduit system of distribution we can avoid these losses to save the water and we can provide sufficient amount of water to the farmers as well as for the industrial purpose.

Water is a precious thing hence proper utilization of water is needed in this century. Hence to minimize water losses and to utilize it properly the closed conduit water distribution system comes into vogue in various states including Maharashtra. The use of this technique is occur from 30-35 years back.

The water is provided to farmers periodically. The period of provision of water is about 3 weeks for areas which are comes under the Shetphal (haweli) pond for irrigation purpose. The water is provided now by using open canal system in which losses of water occur in large amount. Hence government has decided that to provide or to construct the closed conduit system for distribution of water.

The proposed discharge for this system is 98 cusecs which is greater than older discharge. The older discharge is about 52 cusecs. The canal was initially built of length 20km but it is now reduced to 16.52km. In current water distribution system the water losses are more that's why the water reached at the end of canal is much lesser then the requirement. To overcome this effect closed conduit system will be provided.

### Previous works

**Sandesh B. Kulavmode, Dr. S. S. Valunjkar [2017]** conducted study on "Feasibility of Pipe Distribution Network (PDN) over Canal Distribution Network (CDN) For Irrigation."

In this paper they have done case studies to find out feasibility of pipe distribution network over canal distribution network. They have studied two cases to

check this phenomenon. First they have studied Nagthana-2 Minor Irrigation (MI) project. In this case they considered the topography of the area. The area was found to be steep and slope varies from 1-5 percent (%). This condition is suitable for the provision of the pipe distribution system.

The results obtained by them are quite good. When discharge remains same as that of open canal system, the pipe distribution network improves the efficiency by 36%, the land acquisition is decreased by 77%, also increase in culturable command area is 88%.

Hence they also studied the Dongarwadi Lift Irrigation (LI) Scheme and results obtained are also similar to that of previous one.

Also the cost of construction is observed to be greater than open canal system but the cost required for land acquisition is much greater in open canal system than pipe network system. Hence the pipe network system found to be more economical.

**Abdul Samad & Anwaar Mohyiddin [2013]** has worked on "Social Implication Of Water Distribution Through Canal Irrigation System: Case Study Of A Saraiki Village In Southern Punjab."

This project comes into existence for proper distribution of water in village named Banbhan Tehsil Taunsa Sharif District D.G.Khan in south Panjab. They used different methods to distribute the water. The methods adopted to provide water are warabandi, khalpunchait, moga distributary etc.

The culturable command area is about 80 Acres. The water is provided under supervision of government and local farmer committee. In warabandi the water provided to the farmers with the held land which is held by farmers. More the land more water will be provided to that farmer at fixed period. The water is provided by using warabandi method when there is less amount of water available for use.

**Dr. Kartiki S. Naik and Madelyn Glickfeld [2015]** has worked on "Water Distribution System Efficiency: An Essential or Neglected Part of the Water Conservation Strategy for Los Angeles County Water Retailers?"

In this study they had found that water distribution system in Los Angeles is very complex. In Los Angeles there are private as well as public water retailers. The information of water supply schemes is considered which has more than 3000 connections. The information about water requirement per capita is obtained from this study. The water losses measured by retailers and the value obtained was 3-4%.

By doing this study the information is obtained from retailers. The information obtained is upto 50%. They conducted this study with 10 retailers in which 4 out of 10 replaces pipeline water distribution system with canal water distribution system.

**Jitendrasinh D. Raol, Prof. S.A.Trivedi.[2012]** has worked on "Managing Irrigation Canal System With Optimum Irrigation Scheduling For Watrak Irrigation Scheme Of NORTH GUJARAT, INDIA." The project is a medium size project whose main purpose is to provide water for irrigation and for drinking purpose. It was come in existence for the Modasa, Malpur and Bayad

taluka of Sabarkantha district. Also two districts of Gujrat state get benefit of this work or project.

Total culturable command area is about 3239 hectares and revised 3507 hectares. They had decided the schedule of turning ON/OFF the water supply through canal. The scheduling is based on requirements of water for crop on monthly basis.

### III.CONCLUSION

From the review the following conclusions are drawn

1. Pipe network system is better technique to improve the overall efficiency of irrigation project.
2. The pipe distribution network system saves more water and money required for the project.
3. The perfect scheduling required to provide required amount of water for the irrigational purpose.
4. The crop yield and culturable command area can be increased by using optimum irrigation scheduling. It also saves water.
5. In minor irrigation project the whole distribution system should be made of pipeline.

### REFERENCES

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