

Clause 6.2.8 Design Recommendations for use of Modified Hazen-Williams Formula

The following design recommendations are made to ensure effective utilization of pipe carrying capacity.

- I. New CI, DI, Steel, RCC, AC and HDPE pipes behave as hydraulically smooth and hence CR of 1 is recommended.
- II. For design period of 30 years, no reduction in CR needs to be effected for RCC, AC, PVC and HDPE pipes irrespective of the quality of water. However, care must be taken to ensure self-cleansing velocity to prevent formation of slimes and consequent reduction in carrying capacity of these pipes with age.
- III. For Design period of 30 years, 15 percent reduction is required for unlined CI and DI pipes if non-corrosive water is to be transported. The design must also ensure self-cleansing velocity.
- IV. While carrying corrosive waters, unlined CI, DI, and steel pipe will loose 47 and 27 percent of their capacity respectively over a design period of 30 years. Hence, a cost trade-off analysis must be carried out between chemical and bio-chemical correction of water quality, provision of a protective lining to the pipe interiors and design at reduced CR value for ascertaining the utility of CI, DI and steel pipe material in the transmission of corrosive waters.

Recommended CR Values are presented Table 6.4. The use of the recommended value in conjunction with Modified Hazen-Williams formula or the nomograph will permit fuller utilization of pipe materials.