GUIDELINES : ZONAL SPECIFICATIONS FOR VARIOUS TYPES OF PIPES USED IN PLUMBING WORKS


2. Galvanized Iron (GI) pipes have been widely used for internal plumbing works in MES since a long period. The SSR Part-1 also gives specifications of various types of pipes including GI Pipes, Unplasticised Poly Vinyl Chloride (UPVC) Pipes and Poly Ethylene (PE) Pipes etc. With the advent of new technologies various other types of pipes eg Chlorinated Poly Vinyl Chloride (CPVC) pipes, Composite Poly Ethylene Aluminum pipes, Polypropylene Random Co Polymer (PPR) pipes etc are available in the market which are being used at various locations as per availability and knowledge of the executives.

3. Various considerations are taken into account prior to finalizing the material of pipe line to be used for plumbing. The considerations include the following:

   (a) Quality of water which needs to be carried by the pipe.
   (b) Temperature of the area.
   (c) Rainfall and humidity in the area.
   (d) Fixtures which need to be mounted on the pipes.
   (e) Characteristics of the surface where the pipe is to be buried/ laid.
   (f) Pressure of water which is likely to ve exerted in the pipe.
   (g) Economic valuation based on cost/ effectiveness ratio.
   (h) Life cycle assessment of the pipe.
   (j) Skilled workmanship available for plumbing works.
(k) Resistance to hot and cold water.
(l) Thermal coefficient of the pipe.
(m) Ease in handling and transportation.
(n) Ease of repairability.
(o) Not susceptible to bacterial growth.
(p) Able to withstand extreme weather conditions.

4. Views of CEs Command and CEs Zone were sought vide our letter ibid with respect to use of CPVC pipes in their area of jurisdiction due to its advantages especially being economical and easy to handle/lay etc. The inputs have been analyzed and various advantages/disadvantages brought out by Commands/ Zones are summarized as under:-

(a) **Advantages of CPVC Pipes over GI Pipes.**

(i) These are lighter in weight, chemically resistant to corrosion, easy to transport and use, more cost effective and display enhanced performance.

(ii) There is low bacterial growth and no scale formation. These are durable and tough and are not affected by warm water. CPVC pipes are compatible with existing pipeline systems and display long term reliability.

(b) **Disadvantages of CPVC Pipes over GI Pipes.**

(i) High thermal expansion coefficient. Hence, not good choice for climate with wide variations of temperature. Leakage takes place due to expansion and contraction as joints give way in extreme weather conditions.

(ii) Poor workmanship/non-availability of skilled workers in certain areas especially remote areas.

(iii) Adhesive/solvent for sealing joints deteriorates with time. Shifting/displacement of pipeline can also lead to leakage. Adhesive of pipeline not compatible with hot water supply.

(iv) CPVC pipes become brittle as these age and break at freezing temperature. Internal threads of CPVC pipes and fittings get damaged easily. Life of pipe is difficult to ascertain.

(v) CPVC pipes are not included in MES SSR/ED.

5. It is pertinent to note that the quality of water being transported through the pipes, available specialization, workmanship, temperature and humidity cannot be standardized in construction works in MES and will differ from place to place. In India, temperature...
varies from minus 40 degree to plus 55 degree centigrade. Also, the pattern of rainfall, humidity levels, salinity conditions, availability of skilled manpower and material vary as per regions. Hence there is a need to work out the best suited material to be used for plumbing on a Zonal/ Station level keeping the site conditions in mind and inputs of the site executives.

6. In view of the above, CEs Zone are advised to prepare the Zonal Specifications for various types of pipes to be used in their AOR based on considerations and inputs highlighted above. The Zonal Specifications should take into account all the relevant factors of particular type of pipe when used in new work and subsequent maintenance aspects over the life span of the assets.

7. The following points shall also be duly considered:

(a) The pipes recommended in Zonal Specifications to follow nomenclature and specification as per relevant IS Codes.

(b) The plinth area rates to be adjusted suitably for the type of pipe (as per the Zonal Specifications) being adopted while preparing the AEs. The rates are to be considered as per SSR, if available. The standard rates for the pipes which are not available in SSR to be worked out as per market rate analysis till such time the new pipes are included in SSR.

(c) The product approval for pipes to be based on parameters as given in relevant IS Codes to avoid monopolistic situations.

8. Zonal Specifications for various types of pipes to be used will consider local conditions while deciding the type of pipeline to be used. It will also facilitate inventory control as well as ensure availability of skilled manpower.

9. You are requested to disseminate the contents of this letter to concerned staff/executives and confirm implementation.

(Mohit Nautiyal)
Brig
DDGW (PPC & Est)
For E-in-C

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Automation Cell  -  For uploading on MES website in open domain.