

## STEEL PIPES

Steel pipes of smaller diameter can be made from solid bar sections by hot or cold drawing processes and these tubes are referred to as seamless. But the larger sizes are made by welding together the edges of suitably curved plates, the sockets being formed later in a press. The thickness of steel used is often controlled by the need to make the pipe stiff enough to keep its circular shape during storage, transportation and laying as also to prevent excessive deflection under the load of trench back filling. The thickness of a steel pipe is however always considerably less than the thickness of the corresponding vertically cast or spun iron pipe, owing to the higher tensile strength of the steel, making it possible for steel pipe to be more than twice the length of cast iron pipes of the same class, with consequent saving in transportation, pipe laying and jointing costs. Specials of all kinds can be fabricated without difficulty to suit the different site conditions. Due to their elasticity steel pipes adopt themselves to changes in relative ground level without failure and hence are very suitable for laying in ground liable to subsidence. If the pipes are joined by a form of flexible joint it provides an additional safeguard against failure. Steel pipes being flexible are best suited for high dynamic loading. It must be borne in mind, however, that steel mains need protection from corrosion internally and externally.

Against internal corrosion, steel pipes are given epoxy lining or hot applied coal tar/ asphalt lining or rich cement mortar lining at works or in the field by the centrifugal process. The outer coating for under ground pipe line may be in cement-sand guniting or hot applied coal-tar asphaltic enamel reinforced with fiber glass fabric yarn.

### **Laying and Jointing:**

Small sized Mild Steel Pipes have got threaded ends with one socket. They are lowered down in the trenches and laid to alignment and gradient. The jointing materials for this type of pipes are white lead and spun yarn. The white lead is applied on the threaded end with spun yarn and inserted into socket of another pipe. The pipes is then turned to tighten it. When these pipes are used in the construction of tube wells, the socketed ends after positioning with out any jointing material are welded and lowered down. Lining and out coating is done by different methods to protect steel pipes. While laying, the pipes already stocked along the trenches are lowered down into the trenches with the help of chain pulley block. The formation of bed should be uniform. The pipes are laid true to the alignment and gradient before joining. The ends of these pipes are butted. against each other, welded and a coat of rich cement mortar is applied after welding. Steel pipes may be joined with flexible joints or by welding but lead or other filler joints, hot or cold, are not recommended. The welded joint is to be preferred. In areas prone to subsidence this joint is satisfactory but flexible joints must be provided to isolate valves and branches.

When welding is adopted, plain ended pipes may be jointed by butt welds or sleeved pipes by means of fillet welds. For laying long strength lengths of pipe lines butt joint technique may be employed. The steel pipes used for water supply include hydraulic lap welded, electric fusion welded, submerged arc welded and spiral welded pipes. The latter are being made from steel strip. For laying of welded steel pipe IS 5822- 1986 should be followed.

For more details on different types of steel pipes used, reference may be made to the ISI codes indicated in Appendix 'C'.

Hydraulic testing of the pipe line is as per cast iron, spun iron and ductile iron pipes.