

PRESTRESSED CONCRETE PIPES [PSC]

**EFFICIENT, DURABLE, RELIABLE & ECONOMICAL PIPES
CONFORMING TO IS-784 (2001)**



The main features of pipe

The core of the pipe is made of high performance, dense concrete by the spinning process, being followed in many of the developed countries.

The process allows the use of concrete with very low water cement ratio resulting in high strength, dense and durable concrete. The minimum 28 days compressive strength is 40 MPa.

Winding of H.T. steel wire with accurate pitch and at controlled tension is an important feature of the process.

IHP's mechanically impacted mortar coat is highly impermeable and provides maximum protection to the prestressing steel wire and prevents corrosion.



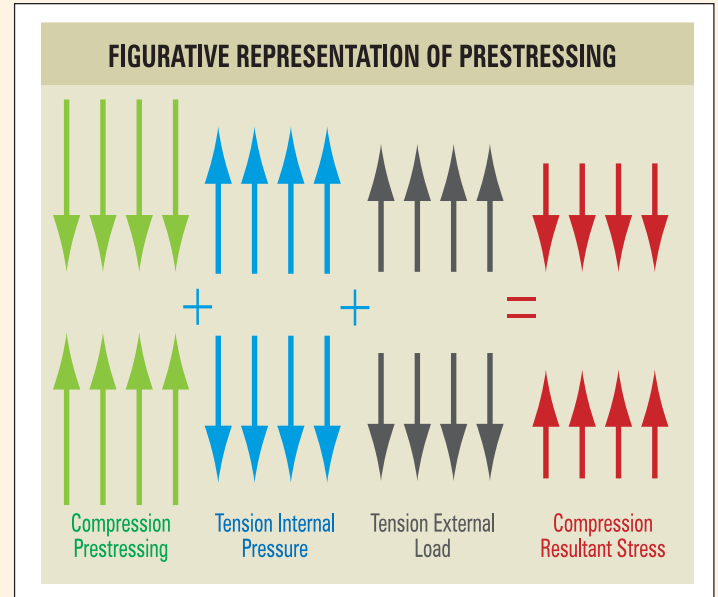
The Indian Hume Pipe Co. Ltd.

Design Concept

Prestressed concrete pressure pipes are designed to withstand all the stresses that the design engineer expects during service. Pipes must safely resist the internal working pressures including water hammer effects and vacuum pressure.

When a pipeline is subjected to pressure, tensile stresses are created in the pipe wall. Compressive strength of concrete is remarkably high but the tensile strength is poor. To get the best advantage, the core concrete is kept in compression under normal working pressure.

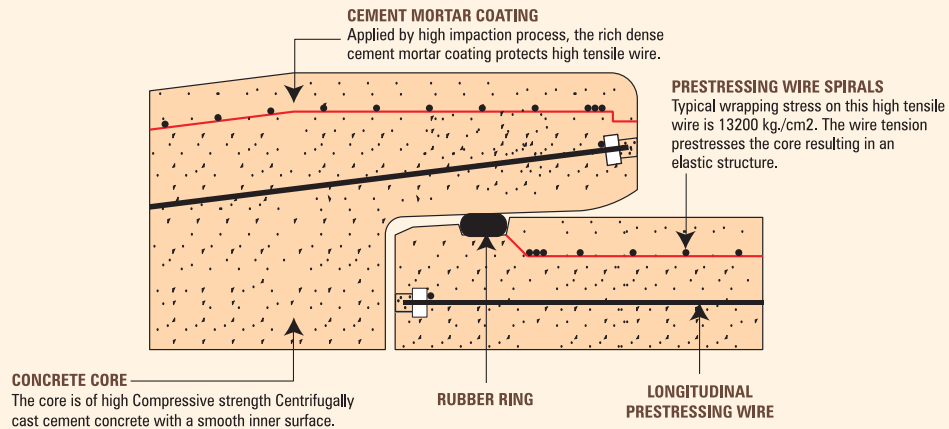
The objective of helical prestressing is to produce uniform compressive stresses in pipe wall to offset tensile stresses resulting from internal pressure, dead and live loads.



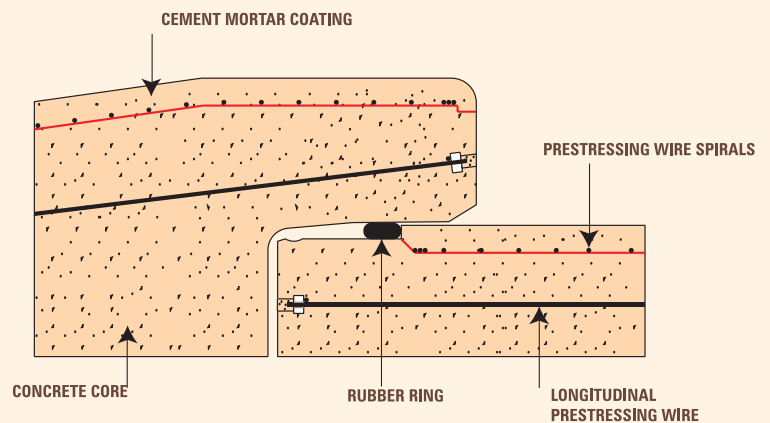
Joint Design

Water tightness between two pipes is ensured by a rubber ring conforming to Indian Standard specifications. At the time of jointing, the ring, placed in groove, is compressed between the joint surfaces of the spigot and socket. Internal pressure further increases the compression of the rubber ring and the water tightness of the joint remains perfectly efficient during the service. The jointing operation is a very simple one as it is sufficient to introduce the spigot, fitted with the rubber ring, into the pipe socket and to pull it home by means of a lever/ tackle or any other device.

The water tightness of the pipeline is closely examined when line tests are carried out at site.



Confined Joint



Roll-On Joint



Concrete Advantages

HIGH DURABILITY AND LOW COST

The prime objectives governing design and construction practices are durability and low cost. Water cement ratios of IHP's concrete and mortar are optimum and concrete compaction methods for core and coating mortar are most efficient. Relevant standard specifications and codes cover selection and use of materials. These measures are supported by extensive research with a comprehensive quality control programme, for water tightness, structural and dimensional checks.

PSC Pipes can be designed for any combination of working pressure and external loads depending upon the actual field conditions and this results in an economical pipeline.

FAST AND SIMPLE INSTALLATION

Installation of PSC Pipes is simple, rapid and easy with minimum efforts.

The inherent rigidity and robustness of IHP pipes eliminates the need for special precautions necessary for pipes with flexible materials and delicate coatings.

BUILT IN ADVANTAGES

- PSC pipes do not totally rely on compaction of backfill to provide lateral support as they are rigid pipes.
- PSC pipes have high crushing and beam strengths and are suitable for installation in most locations, both below and above ground.
- PSC pipes have good abrasion resistance and do not normally require any special lining. Their interior surface remains smooth, guaranteeing sustained high carrying capacity for the lifetime of the pipe.



External load carrying capacity

In our country, for drainage and culverts, RCC Pipes of NP2, NP3 and NP4 classes as per I.S.458 are used and are giving excellent service.

PSC Pipes can also be designed for any load combinations because of unique combination of durability of spun concrete and high tensile wire, which will result in an economical pipeline under heavy external loads.

Coefficient of Roughness

The smooth surface of cement mortar lining provides a Coefficient of roughness 'C' around 140 in Hazen and Williams formula.

Diameter, Pressure and Length

These pipes can be made from 300mm to 2000mm diameters with 5 meter length and working pressure up to 14Kg/ cm². Higher diameter pipes are also possible for large requirements.

Reliability

The company has executed around 685 projects with more than 7000 kilometers of these pipe lines in service all over India as pumping / gravity mains for carrying raw / potable / industrial or waste water.

Experience & Certificates

Starting in 1957, with a commitment to supply quality pipes and installation works, presently, the company is executing around 700 kms of PSC pipelines annually with maximum dia. of 1800 mm and factory test pressure up to 25 Kg/cm².

Our major clients are Water Supply & Drainage Boards, CIDCO, Industrial Development Corps., PHEDs, Irrigation Depts., etc. The company has already supplied and installed huge quantities of PSC pipelines for Private Sector Industries, Farmers' Cooperative Societies, including good numbers of Sugar Factories, Paper mills, Power plants, Steel plants etc.

Certificates of some important works are reproduced for ready reference. IHP was appointed as consultant to WAPCOS for manufacture of PSC pipes for a prestigious water supply work to the city of Rangoon, Myanmar.



For further details/ demonstration contact

The Indian Hume Pipe Co. Ltd.

Regd. Office: Construction House, 5, Walchand Hirachand Road, Ballard Estate, Mumbai 400 001.

Tel: +91-22- 22618091 Fax: +91-22-22656863 E-mail: info@indianhumpipe.com Website: www.indianhumpipe.com