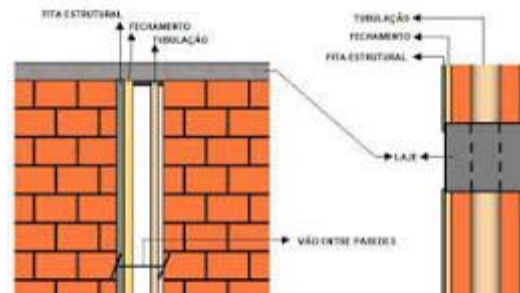


HIDRAULIC INSTALATIONS IN MASONRY BUILDINGS



The demand for processes that rationalize costs in civil construction favored the development of new construction techniques, as is the case of structural masonry which, since the 1970s, has gradually opened up space within the Brazilian market.

Although this construction method is quite efficient, improvements are necessary, mainly aimed at the hydraulic installation system, which presents difficulties in its use in structural masonry, due to the limitations that this construction method presents. In order to provide improvements to this system, many suppliers seek to present innovations focused on hydraulic installations.

Mainly with NBR 15575 which came into force in July 2013, highlighting and being more rigorous with the structure's performance. In addition to NBR 15575 and the clarification of consumer rights in relation to the quality of the product and service provided, the level of requirements requested by customers has increased.

It is common to associate the expression structural masonry with masonry executed through the use of concrete blocks, but this system is not restricted only to this type of material, but also, the use of ceramic blocks is one of the viable materials for the construction of structural masonry. . (ROMAN, 1999). According to Poyastro (2008, p. 21), "masonry is the association of natural or artificial elements, constituting a construction. Currently the connection is ensured by mortar."

Still according to Borges and Borges (1992), in practice, hydraulic installation projects are seen with certain contempt, and, as the work progresses, several problems arise that could have been solved if due importance had been given to the system. it needs.

Brazilian technical standards have been regulated since September 28, 1940 by ABNT (Brazilian Association of Technical Standards), which is recognized by the federal government. ABNT is responsible for preparing Brazilian Standards (ABNT/NBR), prepared by its Brazilian Committees (ABNT/CB), Sector Standardization Bodies (ABNT/ONS) and Special Study Commissions (ABNT/CEE). (ABNT, 2014).

Some Brazilian technical standards, which are most relevant for the design of cold water and hot water hydraulic projects, are:

- NBR 5626 - Cold water building installation;
- NBR 5648 - Building cold water systems - Requirements for pipes and connections
- NBR 7198 - Design and execution of building hot water installations;
- NBR 15575 - Performance of residential buildings

The executive project is nothing more than the subsequent stage of the basic project, where all the elements necessary to carry out the installation will be presented, through plans, sections, details, calculation notes and a list of materials and equipment necessary for execution. (IFC, 2010).

The sizing of the hydraulic system is required to meet and guarantee the supply of water with adequate flow rates to any existing water point in the project, without oversizing the hydraulic network.

According to Helio Creder, minimum flows at points and pressures must also be met.

Pressure loss occurs due to the relative movement of the flow within the pipe and its parts, therefore, it can be considered that the pressure loss is the difference between the initial energy and the final energy of a liquid, whenever it flows. in a pipeline from one point to another. The respective loss can occur in two ways, distributed (caused by the movement of water in the pipe) or localized (caused by connections, valves, registers, etc.). (CARVALHO JÚNIOR, 2013).

As requested in NBR 7198 (1993), hot water installations must be designed and executed in a way that guarantees the supply of sufficient and continuous hot water with a controllable temperature, meeting the requirements of pressure, speed, noise and water quality. water, thus providing safety to users.

Types of Heating Systems Hot water supply is carried out differently from the cold water system. Water heating is carried out using heaters, requiring specific pipes to conduct hot water. The installation of hot water in a building can occur in three ways: Individual, Private Central and Collective Central, your choice varies according to the specific needs of each project. (CREDER, 2006).

Service Pressure: The maximum static pressure, according to NBR 7198 (1993), must not exceed 40 m.c.a. at their points of use. And dynamic pressures cannot be less than 0.5 m.c.a.

According to Macintyre (1990, p. 187), “the minimum service pressures in taps and showers are, respectively, 1.0 and 0.5 meters of water column”.

Service Speed: The water flow in the pipes must not exceed 3 m/s., taking into account places where the noise level cannot disturb the user. The water speed must be limited to compatible values with acoustic insulation. (NBR 7198, 1993).