26. Public standposts

Public standposts provide points where a local community may draw water from a piped water distribution system. They usually comprise a connection to the water main, a suitably supported riser pipe and a tap. Their design and construction has a major influence on their durability, effectiveness and hygiene. However, standposts often receive inadequate attention and failures are frequent. This affects many people, both in rural and urban areas, as standposts often represent the only feasible and affordable means of access to water.

A well-designed standpost must:

- provide sufficient quantities of water to all users when it is needed;
- be durable and reflect local customs;
- contribute towards improvements in public health.

Water use and location

The amount of water used per person depends upon walking distance to the standpost. The standpost must also be able to meet the water requirements of the community served during times of high demand (usually in the early morning and early evening, covering about six hours).

Distance to source:	Not exceeding 250m (<200m where possible)
Water usage:	20-60 litres per person per day depending upon distance
Population served:	150-250 persons per standpost and up to 125 persons per tap

A minimum of 20 litres per person per day (but ideally 35 litres per person per day) should be assured to achieve the benefits of an improved water supply.

Good access is important both for users and maintenance. The standpost should be located centrally in the area it serves, ideally at a road junction, and must be on public land to avoid access problems. In hilly areas, remember it is easier to carry full containers downhill rather than uphill. Easy removal of waste water must also be considered.

Public standposts

Coping i h peak demand

An adequate flow of water must be available during the hours of peak demand. The required discharge (in litres per hour) is given by:

$$Q = \frac{P\ C\ (1+w)}{H}$$

where: Q is the flow of water required in litres per hour;

P is the population served (making allowance for any growth during the life of the standpost);

C is average water usage in litres per person per day, including any use of water at the tap (bathing or laundry etc.). Account must also be made of any water used for other purposes (irrigation or animals etc.);

w is an allowance for wasted water (typically 10-40% of water usage);

H is the number of hours in the day that the standpost is in constant use (6-12 hours typically).

Typical figures for this calculation might be:

$$Q = \frac{P\ C\ (1+w)}{H} = \frac{200 \times 35\ (1+0.30)}{6} = \begin{array}{l}\text{1 517 litres per hour}\\ \text{0.42 litres per second}\end{array}$$

A 12mm standard tap will discharge about 0.22 litres per second under normal pressure, and in the example above, a standpost provided with two 12mm tap outlets would suffice. Alternatively, a 19mm tap will discharge 0.42 litres per second under similar conditions. These are the minimum requirements. Additional taps could be considered to reduce queuing during periods of peak demand.

H dra lic de ign

As water flows from the main and through the standpost, pressure is lost for three reasons:

- **Change in ele a ion:** invariably, the taps will be higher than the water main and available pressure is reduced by their difference in elevation.
- **Pipe fric ion:** energy losses depend upon the length of pipe, its diameter, and rate of flow. The table below allows approximate values for losses to be calculated. Fittings, such as bends, tees etc. cause additional losses and a rough allowance for these losses through a typical standpost layout may be obtained by increasing the pipe length by 10%.
- **Tap :** major losses occur as water passes through a tap depending upon rate of flow and the tap design. Head losses of around 2.0m are typical.

Flow l/hr	Size of GI pipe (mm)		
	12	19	25
500	0.30	0.03	-
750	0.65	0.06	0.01
1 000	1.10	0.10	0.03
1 500	-	0.23	0.06
2 500	-	0.65	0.15

Approximate head losses due to pipe friction, expressed in metres per metre length for galvanized pipe.

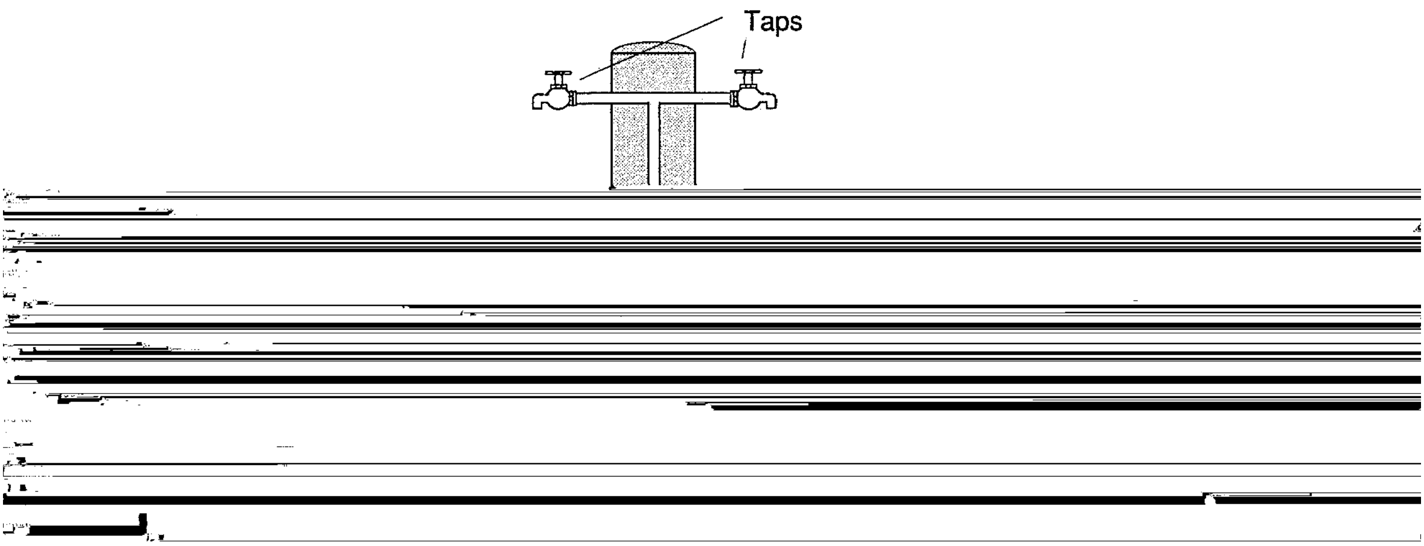
To ensure that an adequate flow of water is available at the tap, the total head lost must equal or be less than the head available in the main at the point of connection.

Total head Loss	=	diff. in elev. of main and tap	+	loss in pipes and fittings	+	loss through the tap	<	head in main

In critical situations where the energy losses will exceed the head available in the main, they may be reduced by shortening pipe; connecting pipe; increasing its diameter; relocating the standpost to reduce the difference in elevation between the tap and the main; or increasing the size and number of taps provided. Where considerable surplus energy is available, a valve may be added to restrict the flow and dissipate energy.

La o and de ail

Public standposts are subject to heavy use and abuse. They are also the contact point between the public and the water supply. They must therefore be simple to construct, durable and easy to maintain, and reflect local social and cultural needs.



The main componen of he andpo are:

The ppor ing po

The supporting post encases the riser pipe and is made of durable materials such as concrete or masonry. Ideally it is about 300mm square and extends 100mm above the taps to protect them. A raised stand under the taps may be added to support containers while being filled, depending upon local customs.

The pla form or apron

The platform or apron extends at least one metre all around the taps. Where bathing or laundry is carried out at the tap, the apron should be extended to collect all waste water. It may be made of concrete at least 150mm thick and lightly reinforced to prevent cracking. An upstand around the perimeter will contain the waste water and a floor slope of between one in 50 and one in 100 will direct the waste water to the drain outlet.

The er ice pipe

The service pipe may be galvanized iron (or PVC if it is well protected), of diameter 12mm to 36mm depending upon the number of taps served. A main valve is required to isolate the unit, and a further control valve can be incorporated if flows need to be restricted. A meter may be used for charging for consumption and monitoring, but it is often prone to damage and must be well secured in a lockable box together with any control devices.

The ap

The taps should be robust and easy to maintain. They constitute a small proportion of the total standpost cost but are a major source of problems. Hence, careful selection is necessary and the best quality that can be afforded should be fitted. Spring loaded taps will reduce wastage but are frequently broken by users. The height of the taps should be convenient for the users (often women and children) and is typically 0.7m to 1.0m.

Drainage

The disposal system for waste water from the standpost area is an integral part of standpost design. Waste water should be prevented from running on to surrounding ground and should be directed to gutters, lined drains or natural drainage channels where possible. An alternative is the construction of a soakawa7 naturt oCilar 25 (e iso30 (or(ging f)30.1 (a (