An access plug for well chlorination

by George Babic

A cheap and easy method to both ensure access to the well water for treatment and prevent contamination.

IN ORDER TO provide and maintain a clean water supply from community wells, handpumps are often installed and the top of the well is sealed with a cover. The use of a pump reduces the contamination of the water by rope and bucket, and the cover reduces the contaminants that can fall into the well.

Contaminants may still be able to enter the well, however, by means of infected underground water. This contamination could be treated periodically by applying chlorine or its equivalent through an access hole in the well cover. Metal doors are often used to seal the access hole, but they are relatively expensive and are subject to corrosion. A suitable alternative is a plug.

The plug is actually a truncated concrete cone. The size chosen provides a hole that is large enough to allow the proper treatment of the well, but small enough to prevent the use of a bucket to obtain water. Other dimensions may be used, but (see Figure 1) the angle 'A' should always be greater than 22 degrees. If a smaller angle is used the plug will tend to stick. The handle on the top of the plug is for easy removal, and the loop on the bottom can be used to hang a dispenser of chlorine solution for slow release into the well water. The round shape eliminates edges and corners that are crack-prone, and it is impossible to drop the plug into the well.

The thickness of the plug (13cm) is greater than the thickness (10cm) of most well covers. This difference is made to accommodate a raised edge around the access hole so that water will always drain away from the access hole. The raised edge should never be higher than the plug.

In order to make the concrete plugs, a master cone should be made, preferably from wood, to the dimensions in Figure 1. The wooden master should be coated with at least two coats of varnish, shellac, or polyurethene to protect the wood from future applications of oil or grease.

Two methods may then be used to make the plugs themselves. A mould can be made by first oiling the wooden master and then placing it in an empty and slightly larger solid box. Concrete or plaster of paris is then poured into the box around the mould. When the wooden master is removed after the concrete or plaster hardens, a cavity of the proper shape is left. This concrete or plaster of paris mould can then be used to make many plugs.

The second method is to dig a hole in the ground into which the wooden plug can be placed. Dirt is then packed around the wooden plug and the plug is carefully removed, leaving a cavity into which conrete can be poured. In both cases a handle made from steel or its equivalent should be placed in the cavity before pouring the concrete.

The access hole in the well cover is also made with the wooden master. When a form is prepared for making the cover, the wooden plug is placed within the form area. The well covers are usually 10cm thick, and since the wooden plug is 13cm thick, the concrete is sloped up to within 1.5cm of the top of the plug to obtain the correct fit.

An alternate method to obtain a lip around the access hole is to employ a fixture as shown in Figure 2. This fixture will result in a lip, as shown in Figure 3. A sample pour of a cover and a plug was made and Figure 4 shows the results.

George Babic was a Peace Corps volunteer in Morocco, and can be reached at 51 Hickory Lane, West Hartford, Connecticut, 06107, USA.

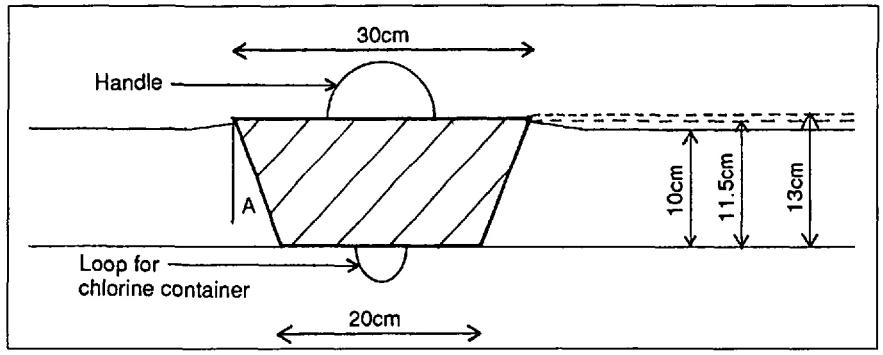

Figure 1. Access plug and cover slab dimensions.

Figure 2. A fixture attached to the mould can be used to produce the lip.

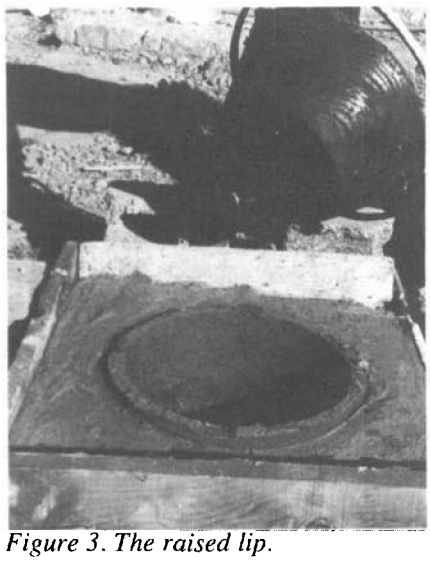

Figure 3. The raised lip.

Figure 4. A concrete plug being placed in the test cover-slab.