

PLANT PROBLEMS . . . put your know-how to work help the other guy cure his headaches

TYLER HICKS, Associate Editor



OUTDOOR VALVE markers give compass bearing and distance so personnel can easily locate valve. Sign also identifies valve



Question No. 1: How Can We Find Underground Valves?

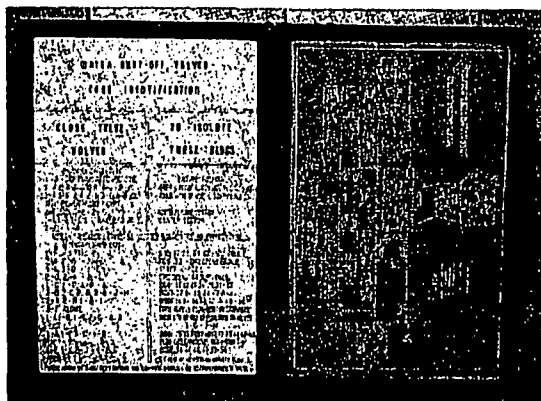
HERE ARE THE FACTS: Our hospital has over 100 buildings on 1600 acres. Water-supply pipes run underground to all parts of hospital. System is quite complex.

Several times we've had to find underground shut-off valves in a hurry. Because we have no positive system, we've wasted water, isolated the wrong buildings, and had other delays.

Problem is further complicated by system changes not shown on our plans, personnel turnover, and poor indication of valve location. I'd like to straighten out this mess without having to dig up every pipe and valve we have, then place unobtrusive markers for the valves that won't interfere with lawn mowing.

What's best way to mark valves? How can we find them?—*BL, April Power*

Here Are the Answers



CODE IDENTIFICATION of water valves and piping-system plan simplify valve use

OUR HOSPITAL, a mental institution, resembles *BL*'s in many ways. A few years ago we had the same problem of locating valves in water-supply mains. Here's how we solved it.

Several emergencies showed few of our men could locate the right valve in a hurry. We lost water, suffered building and equipment damage that would not have occurred if the correct valve had been closed.

To set up our marking program we divided our land into plots called Sectors 1, 2, 3 and 4. Sector boundaries were marked on two large plot plans of the water-system piping. A code designation was assigned each main shutoff in each sector and marked on the plan. Code consists of sector number and a letter for each valve. For instance, 2-C indicates valve C in sector 2. Next, we drove a stake near each valve. Then we placed a compass on top of the stake, and stretched a string

between it and a point over the center of the valve. Bearing of the string was noted, and distance between valve and stake measured. Code designation, valve bearing and distance are stenciled on a marker attached to stake. Photos, top of facing page, show several typical stakes with their markers.

Before placing stakes we considered three items: (1) accident hazard to pedestrians and traffic (2) operation of power lawn mowers and other gardening equipment (3) danger to patients, or removal of stakes by them. Study showed best location of stakes was usually near permanent objects—buildings, trees, fences, etc. Distance of stake from valve was not too important.

Stakes are made from scrap 1-in. pipe, having a 4-in.-square scrap steel plate welded to bottom. A 5/8-in. marker plate is welded to stake top. Post-hole digger is used to place the stakes. Backfill is well tamped in. Stakes cannot be removed without digging up earth around them. Height of stakes varies with snowfall conditions. Ours are 24 in. above ground.

Our last step was to make charts showing valve use, and which ones must be closed to isolate a building. Charts are hung beside plot plan in plumber's shop, and engine room, photo, bottom, facing page. Valve identification is easy.

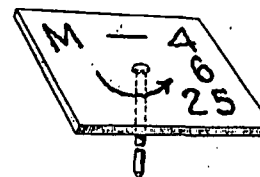
In an emergency all we need know is building or area affected before referring to chart to see which valves we must close. Equipped with a compass and measuring tape the operator easily and quickly locates the valves on his first try.

What we like about our system is that even though men come and go, and valve locations may be changed, a new man can always find the right valve. Of course, this assumes markers will be changed whenever valves are. But to date this job hasn't proven burdensome because valves are so seldom changed.

Markers are used only for main shutoffs. Valves for hydrants, buildings, sprinklers, etc., run into the hundreds and individual identification would be confusing. In an emergency we isolate a whole area; then when we have more time, we return to shut the smaller valves.

We think our system is tops. The idea is not new, but this use of bearings in degrees instead of letter points eliminates confusion, especially where three or more valves are in a 5-ft circle and some distance from the markers.

LC VAN HUSEN Orangeburg, N. Y.



LOCATE VALVES that are "lost" under ground by moving a large compass over the area where valve is thought to be. By keeping card vertical, the needle assumes a vertical position when directly over valve. An army mine detector might also be used, but I haven't yet seen one tried.

Make markers from flat 3/8-in.-thick steel plate about 6x8 in. Weld a 2-ft length of scrap pipe or rod to plate bottom. Letter plate with raised beads of weld metal on top face. Paint a bright color, such as yellow, to contrast with lawn. Drive plate flush with grass so lawn mower clears it.

Identify main and branch water lines with a letter corresponding to that on blueprint of system. Use numbers for further identification and an arrow to show direction valve is opened, sketch.

Bring blueprints and records up to date as soon as possible after locating valves and manholes in piping system.

A W GOULD

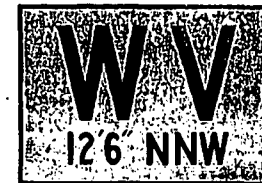
Lowell, Mass.



USE MINE DETECTOR, purchased in a surplus-material store. It is simple to operate and can be carried by one man, as the sketch above shows.

A M PALMER

Brooklyn, N. Y.



IN ERITREA, Africa, in 1942, we ran into almost the same problem when building an aircraft repair base on the site of the Caproni assembly plant, which had been severely bombed. By interviewing prisoners of war we found a man, Angelo, who was willing to work for us and who knew the water system.

Starting from scratch with the lines we could find and Angelo's memory, we approximated the valve positions, marked them with stakes and started digging. Sometimes we found a manhole or a valve after much digging. If we didn't, we installed new valves. By cut and try we found the areas controlled by each valve, recorded them, and stamped this information on brass handwheel disks.

After building manholes for the valves, we stenciled reference markers on the nearest permanent structure. Besides making drawings of the layout we prepared a listing that quickly directed a person to any valve he was interested in. Total time for job was about 60 days, but we saved its cost the first year. Sketch above shows typical reference marker used on this job.

HOWARD HOLCOMBE

Los Alamos, N. M.

SEVERAL SCHEMES *BL* can use are: 1. Unless accurate drawings of piping system are available, prepare a flow diagram showing equipment served, pipe sizes and valve tag numbers. Be sure to include master shutoff valves that isolate a building.

2. Identify all pipes by stenciling service name on pipe where it is readily seen. Or use color bands recommended by American Standards Association.

3. Attach metal tags to valve handwheels. Secure with handwheel nut or clamp on wheel spokes. List service,

For this month's two new questions, turn to page 138