

The Hong Kong Institution of Engineers**LegCo Panel on Housing and LegCo Panel on Planning, Lands and Works****- Joint meeting on 16 May 2003 -****General Comments on the design of sewerage system of residential buildings in Hong Kong**

The Hong Kong Institution of Engineers (HKIE) is of the opinion that the Department of Health's report on the investigation of the outbreak of SARS in Amoy Garden does not contain sufficient evidences to support their findings that the building sewerage system was a probable transmission path of the disease as many problems identified were due to poor maintenance and improper use or modification of the drainage system. We believe that the outbreak was more prone to direct and indirect contact, pest infestation and environmental contamination. Nevertheless, the investigation had identified that certain aspects of the sewerage system should be improved to account for the misuse and to maintain good hygiene standard of our living conditions.

The following items are submitted for consideration:

Dried up U-trap of bathroom floor drains

In order to avoid foul smell and insects in the soil stack from entering the bathroom, the U-trap of bathroom floor drains must be always filled with water. We recommend that the Government should take immediate action to educate the general public to regularly pour water into the floor drains. We suggest that this is done at least once a month.

For the longer term, we recommend that the drainage system be slightly modified so that the floor drain U-traps are automatically and continuously primed. One possible solution is to connect the wash basin discharge pipe in between the floor drain grating and its U-trap, as illustrated in Figure 1. Such arrangement is widely adopted in Singapore, Malaysia and some part of the Mainland China. Other alternative means of automatic priming may be considered.

Although it is not a statutory requirement to provide floor drain inside bathrooms and kitchens, such provision has its obvious merits and we do not recommend to remove this provision.

Improper modification of the drainage system

It was found that U-traps in some apartments had been removed by the residents during alteration and redecoration of their bathrooms. Such improper modification is not in accordance with the Building Regulations and residents should reinstate the missing U-traps immediately.

Under the current Building Ordinance, there is no requirement for statutory approval of any modification work on the drainage system after the building has been occupied. Moreover, there is no licencing requirement for workers undertaking building drainage works. We recommend that such inadequacies in the existing legislations should be rectified.

Faulty pipework

Leaky joints and broken pipe of the drainage system are the result of lack of regular inspection and maintenance. The faulty pipework should be repaired immediately to stop leakage of effluents and foul air from contaminating the environment.

We recommend that a mandatory inspection of the building drainage system should be carried out by licenced building drainage workers at an interval of not more than five years. In this respect, the Government should take the lead to carry out such inspection for all housing estates and Government buildings.

Also, property developers should be encouraged to provide permanent means for carrying out regular inspection, maintenance and repair of the building drainage system, such as gondola/building maintenance units, davit arms or inspection platforms.

In addition, the HKIE has reviewed other aspects of the current building drainage design and come up with the following recommendations:

One-pipe system Vs two-pipe system

One-pipe system (i.e. combined soil and waste stack) has been commonly used in Hong Kong and other countries for decades. Although the adoption of separate stacks for soil and waste (i.e. two-pipe system) could minimize the risk of cross contamination, it is not considered a practical and cost effective solution because it does not resolve the problem of drying up U-trap. Moreover, the amount of vertical stacks will be doubled therefore incurring significant additional cost, imposing a lot of spatial constraints on the congested re-entrant and light well space, and the solid waste in the two-pipe system cannot be properly flushed due to insufficient flushing water. Technically, one-pipe system is better because of the flushing effect by water discharged from the bathtubs and wash basins. In our opinion, a properly designed, installed and maintained one-pipe drainage system is considered adequate.

Internal pipework Vs external stacks

A common problem related to repair and maintenance of internal pipework is the difficulties in gaining access from resident's area. Locating the drainage pipework on the exterior of buildings has the advantage that maintenance can be carried out with minimal disturbance to the residents. However, locating the pipework internally is also considered acceptable if adequate pipe duct space can be provided with proper access from the public areas (e.g. common corridor) for inspection, maintenance, repair and future replacement.

In summary, the HKIE is of the view that the current design of the building drainage system is up to international standards. We have identified certain areas where improvements of the design could be made to enhance users' requirements but more importantly, we consider that more attention should be paid on inspection and maintenance of the building drainage system and we recommend that the Government should implement legislations for the licencing of building drainage workers, statutory approval of post occupation modification work and mandatory inspection of the building drainage system.

The HKIE also strongly recommends that the Government should publish a Code of Best Practice for design, installation and maintenance of building drainage system. We are prepared to provide assistance on the drafting of the code.

Finally, we urge the Government to consider restoring the confidence of the public on our drainage system and prevent from any further announcement that the propagation of the Urbani Coronavirus is via the drainage system itself as we strongly believe that adequate inspection and maintenance are essential to ensure proper functioning of the drainage system.

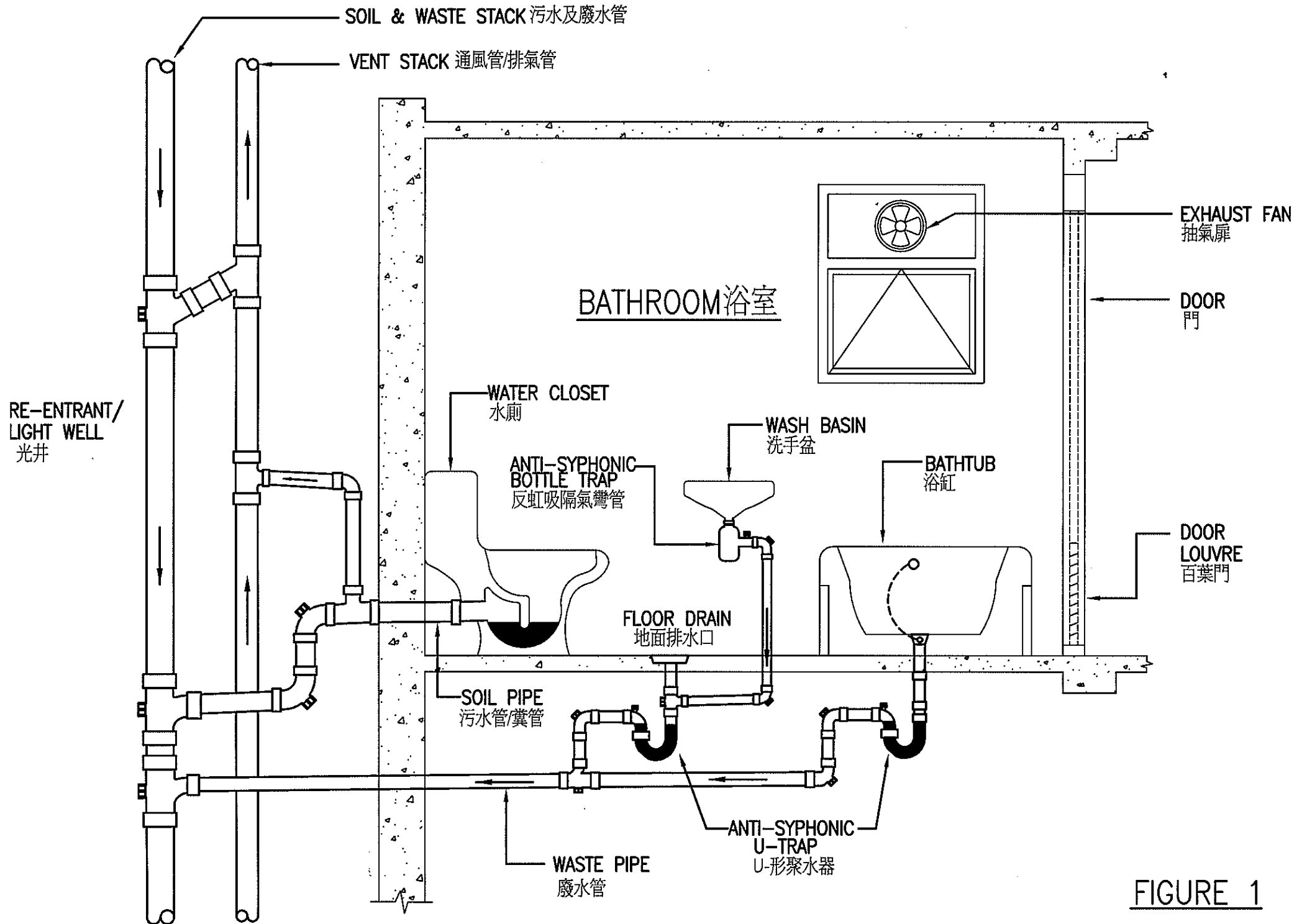


FIGURE 1