PLB(B) 76/97/02 (98) II

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14 June 2001

Clerk to the Legislative Council Panel
on Planning, Lands and Works
(Attn.: Mrs Queenie Yu)
Legislative Council Building
8 Jackson Road
Central
Hong Kong

Dear Mrs Yu,

Water Seepage in Private Premises

Thank you for your letter dated 5 June 2001, enquiring about progress on this issue which has been raised in discussions held between Members of the Legislative Council and District Councillors of the Sham Shui Po and Yau Tsim Mong District Councils.

Water seepage in private premises is a difficult problem to solve, especially where the seepage rate is low. But prevention is better than cure. Regular maintenance of water-carrying pipes and water proofing will reduce the problems. From 1 July 2001 assistance is available to owners of premises under the Comprehensive Building Safety Improvement Loan Scheme for repairing, maintaining and replacing such items.

Since 1 April 1998 to assist owners a one-stop system to deal with water seepage complaints has been introduced. Under this system the Food and Environmental Hygiene Department (FEHD) acts as the central co-ordinator and initially investigates all water seepage complaints. This ensures that any health nuisance resulting from serious water seepage is abated. If the cause of the seepage cannot be readily identified, the case is referred to Buildings Department (BD) or the Water Supplies Department for follow-up action. However, as noted by the Sham Shui Po District Councillors, identification of the cause of water seepage is difficult and the traditional tests using dyes or water consumption are not always effective. For this reason, the BD is commissioning a consultancy on the technology to detect the source of water seepage. The consultancy was gazetted in June 2000 and 15 tenders were received. There have been technical problems in letting the consultancy. These are now being resolved and we expect the consultancy to be let in August 2001 for completion by October 2002.

The consultancy is expected to advise on more effective ways of non-destructive testing for water seepage and to formulate technical guidelines on the scope and types of investigation work on water seepage, for use by Government departments and building professionals. We will consider whether legislative amendments are necessary to facilitate this work.

As a long term measure to avoid water seepage originating from
--------- pipes embedded in the structure of the building, BD has issued a Practice Note for Authorized Persons and Registered Structural Engineers (PNAP 230, revised edition March 2000) advising them to design the routing of all water-borne piping away from structural walls and floor slabs. For new building projects, drainage plans showing embedded water-borne piping will not normally be approved unless there is full justification. As an incentive, where water-borne piping is placed in ducts which are easily accessible for maintenance, the Building Authority may exclude the ducts from the calculation of gross floor area.

With regard to the concern of Yau Tsim Mong District Councillors that the partitioning of some domestic premises into several self contained units may, through associated substandard drainage works, aggravate the problems of water seepage, BD has powers to serve a removal order on the building owner if the building works adversely affect the structure of the building or the fire safety. If the drainage works cause water seepage BD may serve an order on the owner to carry out repair of the defective drainage pipe.

Concerning the partitioning by deed poll the Government is not involved in these procedures which are carried out by activities in private practice. It is for the parties concerned to ensure that they have obtained all necessary approvals before partitioning. For instance, where there is a restriction in the lease on the number of units to be provided in a lot the partitioning may result in a breach of lease conditions. Where the partitioning works are building works involving the structure of the building, then prior approval is required from the Building Authority. After obtaining such approvals, it would be advisable for the deed poll to be registered.

Yours sincerely,

(Geoffrey Woodhead)
for Secretary for Planning and Lands

c.c.	Director of Buildings	(Attn.: Mr CC Tsang)	2840 0451
	Land Registrar	(Attn.: Ms May Lee)	2596 0281
	Director of Food and Environmental Hygiene	(Attn.: Mr Kevin Choi)	2893 3547
	Director of Water Supplies		2824 0578

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Water Seepage

Water seepage has been a cause for concern to a number of Government departments including the Buildings Department. Causes of seepage are many and varied but one of the common sources of seepage relates to water-borne piping embedded in the structural members of a building.

2. The problems associated with water seepage of the above-mentioned nature is complex and difficult to resolve for the following reasons :

(i) The party affected (lower floor) is normally not the one who created the problem (upper floor), therefore co-operation is usually not forthcoming. If common areas are involved, multiple ownership status of such areas further complicates the problem;

(ii) It is difficult to locate the defective sections of water-borne piping for repair, as water leaks and finds its path of least resistance through cracks and ducts; and

(iii) Even if such defective sections are accurately identified, the breaking up of structural elements for repair is very costly and disruptive to the occupiers, which would discourage them from co-operating.

3. Water seepage arising from embedded piping causes not only nuisance but also deterioration to the structural member of a building if unattended for a prolonged period. This practice note seeks your co-operation to cure the problem at source. You are strongly advised to design the routing of all water-borne piping off structural elements to facilitate the indispensable need for repair and replacement of such piping during the design life of the building, which would normally outlast the design life of the piping. The huge benefit to the consumers and the public that this will bring about in terms of easy maintenance of the building for its entire design life will certainly outweigh the efforts you, as Authorized Persons and Registered Structural Engineers, have to make at the design stage of a building project.

4. To ensure the long-term integrity of all structural elements and also to avoid sanitary nuisance arising from water seepage, you are required to state explicitly in the drainage plans that no water-borne piping, other than that specified in paragraph 2 of the guidelines at Appendix A, will be embedded in structural elements. If despite my advice you still decide to embed any section of such piping in any structural elements, you will be required to submit for my consideration details showing the routing of all

/ water-borne

water-borne pipes when you apply for approval of drainage plans and to justify to my entire satisfaction how you would achieve the above objective of ensuring the long-term integrity of such structural elements. Omission of such routing details, or the justification of such omission as the case may be, would result in disapproval of plans under Section 16(1)(i) of the Buildings Ordinance. This will take immediate effect for all new building projects for which building plans are submitted for the first time for approval.

5. Your attention is also drawn to the importance of preventing water seepage from other sources, particularly the following :

- inadequate water-proofing construction and design of floor and roof slabs;
- poor workmanship in laying and fixing water-borne piping;
- sub-standard sanitary fitments; and
- lack of attention to ponding of water, eg. underneath bath tubs and washing machines.

6. To assist designers to route water borne pipes off structural elements, the Building Authority is prepared to grant modification to permit genuine and properly designed pipes ducts which are provided with adequate access for inspection and maintenance in new buildings to be excluded from gross floor area calculation.

(C M LEUNG)
Building Authority

Ref. : GP/BORD/92
GP/BREG/P/9 (III)

First issue October 1999
This revision March 2000 (AD/D) (para. 3(d) of Appendix A and para. 6 added)

Index under : Water seepage
Water-borne piping embedded in structural elements

Appendix A
PNAP 230

Guidelines on embedment of water-borne pipes

1. In general, embedment of water-borne pipes in structural members, other than those specified in paragraph 2, would not be permitted within columns, slabs, structural walls, beams or transfer plates.

2. Water-borne pipes piercing through the following structural members may be permitted where it is demonstrated that no adverse effect will be caused to the performance of the structural members and, where the pipes are easily accessible for maintenance :

   (a) Vertical pipes piercing through structural slabs, transfer plates; and

   (b) Horizontal pipes piercing through beams, columns or structural walls.

3. In the context of para. 2, no adverse effect may be assumed in the following circumstances :

   (a) Vertical pipes piercing through r.c. floor slabs, transfer plates :-

      (i) The size of a hole formed is not greater than 150mm in diameter and no main reinforcement is severed to make way for the hole;

      (ii) Trimming bars not less than the size of the main reinforcement of the slab are provided around the hole.

   (b) Horizontal pipes piercing through r.c. beams :-

      (i) The size of a hole formed is not greater than 150mm in diameter or 1/3 the depth of the beam, whichever is the less;

      (ii) The hole is formed at the neutral axis of the beam section; and

      (iii) Vertical and horizontal trimming bars not less than 16mm in diameter are provided around the hole and at each side of the beam.

   (c) Horizontal pipes piercing through structural walls :-

      (i) The size of a hole formed is not greater than 150mm in diameter or the minimum bar spacing of the vertical reinforcement of the wall, whichever is the less; and

      (ii) Vertical and horizontal trimming bars of size of not less than the vertical reinforcement bars of the wall are provided around the hole and at both side of the wall.

   (d) Embedment of drainage pipes for disposal of condensation from air-conditioning units.

Ref. : BD GP/BORD/92
First issue October 1999
This revision March 2000