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(ACE Paper 10/97)
for advice

**Noise Control (Amendment) Bill 1997
and Amendments to the
Technical Memorandum on Noise from Percussive Piling,
and the Technical Memorandum for the Assessment of Noise from
Places other than Domestic Premises, Public Places or Construction Sites**

Introduction

This paper seeks Members' advice on the proposed legal instruments to implement further controls on noise from percussive piling, which comprise the Noise Control (Amendment) Bill 1997 (at Annex A) and the Technical Memorandum on Noise from Percussive Piling (at Annex B), and on proposed housekeeping amendments to the Technical Memorandum for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites (at Annex C).

Proposal to Reduce Noise from Percussive Piling

2 Percussive piling is a noisy construction operation and can generate significant noise impact on its neighbourhood. The Noise Control Ordinance prohibits percussive piling from 7 p.m. to 7 a.m. on weekdays and any time on general holidays. During the permitted hours, percussive piling is controlled through a construction noise permit system which restricts such activity to three hours, five hours or 12 hours a day, depending on its noise impact on the adjacent noise sensitive receivers. The detailed technical criteria for the issue of construction noise permits are set out in the Technical Memorandum on Noise from Percussive Piling.

3 Diesel hammer is the most common equipment used in percussive piling, constituting over 80% of piling permits issued. It produces noise levels up to 103 dB(A) at 10 metres; coupled with its black smoke emissions, its use in the built-up areas is very disturbing to its neighbourhood. There is hence a need to introduce, as far as practicable, further controls on noise from percussive piling.

4 It has been proved in overseas countries such as Singapore that hydraulic hammer is a more environmentally friendly alternative to diesel hammer. In collaboration with various government departments including Buildings Department, Housing Department and Architectural Services Department and participating suppliers, the Hong Kong Construction Association completed a series of piling tests which demonstrated that hydraulic hammers can achieve the required hammer efficiency. Moreover, hydraulic hammers are more amenable to noise reduction devices such as acoustic shrouds. We therefore propose to gradually phase out noisy diesel hammers and replace them with quieter alternatives such as hydraulic hammers. We also propose that the replacement programme should cover pneumatic and steam hammers, which, though sparingly used, are the noisiest, producing noise levels up to 106 dB(A) at 10 metres.

5 To moderate the impact of the proposed controls on the construction industry and to allow time for suppliers of hydraulic hammers to meet the demand, we propose a four-stage programme to phase out the use of diesel, pneumatic and steam hammers in the built-up areas. In the first stage, no piling operation using the controlled hammers will be permitted if their noise impacts exceed 20 dB(A) above the specified noise level in the Technical Memorandum. This noise standard will be further tightened in the second stage to 10 dB(A), which would effectively preclude the use of controlled hammers in about 60% of the piling sites. In the third stage, piling operations using the controlled hammers will not be permitted if it generates noise above the specified level. In the final stage, a construction noise permit for diesel hammer will only be issued if its noise impacts on sensitive receivers is at least 10 dB(A) below the specified level. This measure practically bans the use of diesel, pneumatic and steam hammers in the built-up areas. Nonetheless, such hammers can still be used in remote areas with no nearby noise sensitive receivers.

Noise Control (Amendment) Bill 1997

6 With a view to implement the proposed control scheme, amendment to the Noise Control Ordinance is required to provide the necessary legal power for the Secretary for Planning, Environment and Lands to impose more stringent noise standards on diesel, pneumatic and steam hammers. The proposed amendment to Section 9 of the Noise Control Ordinance, as shown at Annex A, adds a new empowering provision to enable the relevant Technical Memorandum to set out differential noise criteria and limits for different percussive piling devices.

Technical Memorandum on Noise from Percussive Piling

7 Subject to enactment of the Noise Control (Amendment) Bill, the Technical Memorandum on Noise from Percussive Piling will be revised to set out the noise criteria for the issue of construction noise permits for different types of hammers. Proposed revisions to this Technical Memorandum is at Annex B.

Technical Memorandum for Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites

8 The opportunity of this legislative exercise is also taken to amend the Technical Memorandum for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites, which came into operation on 7 December 1988. It details the procedures for the measurement and assessment of noise emanating from places other than domestic premises, public places or construction sites, and for the issue of noise abatement notice and its subsequent compliance monitoring. In light of the enforcement experience gained over the years, minor amendments to the Technical Memorandum are proposed to clarify certain provisions. These include revising the definition of "industrial area" to make it consistent with other Technical Memoranda issued under the Noise Control Ordinance, allowing assessment of noise levels inside a building where appropriate, and providing flexibility in determining the sampling time for measuring steady noise sources. The revised Technical Memorandum is at Annex C.

Legislative Timetable and Commencement

9 Subject to Members' endorsement, the Noise Control (Amendment) Bill 1997 will be submitted to the Executive Council in March 1997 for introduction to the Legislative Council on 16 April 1997. After its enactment, the revised Technical Memorandum on Noise from Percussive Piling and the amended Technical Memorandum for the Assessment Noise from Places Other Than Domestic Premises, Public Places or Construction Sites will be submitted to the Legislative Council for negative approval.

10 Stage 1 control will commence in early 1998 and the subsequent stages will come into effect successively at six month intervals. Meanwhile, Government will also take the lead to promote the use of hydraulic hammers in public works projects in advance of legislative controls. Administrative measures to phase out the controlled hammers are expected to begin later this year.

Financial and Staffing Implications

11 There are no financial and staffing implications.

Economic Implication

12 There will be economic implications on construction activities relying on diesel, steam and pneumatic hammers. The Hong Kong Construction Association estimated that at present around 140 diesel hammers are in local use. The capital investment required for complying with Stages 1 and 2 controls will be about \$248 million at 1994 prices, and \$62 million and \$104 million for Stages 3 and 4 controls respectively. These estimates are based on the assumptions that some diesel hammer piling rigs can be used with hydraulic hammers and that some diesel hammers could be sold elsewhere to offset replacement costs.

13 Taking the normal working life and running costs of hydraulic hammers into consideration, the proposed controls will increase piling costs by 2-4%, which represents less than 0.2% of the overall development cost for a typical building contract. As the demand for piling in civil projects is generally small, the overall percentage increase in cost in civil contracts is expected to be even smaller. The trade accepted that these figures are broadly in line with their estimates.

14 Under the existing permit system, a longer period of working hours may be granted in border-line cases if a quieter hammer is used. This possible increase in permitted working hours would allow the contractors to maximize the utilization of resources, thus shortening the construction time.

Environmental Implications

15 Hydraulic hammer is about 2 - 9 dB(A) quieter than diesel, pneumatic and steam hammers and will not emit any dark smoke, which is another source of environmental nuisance associated with diesel hammers. Moreover, unlike diesel, pneumatic and steam hammers, which are constrained by heat, ventilation and exhaust requirements, hydraulic hammers are more amenable to additional noise reduction devices such as acoustic shrouds.

Public Consultation

16 The Professional Persons Environmental Consultative Committee, the Piling Contractors Committee of the Hong Kong Construction Association, the Authorized Persons and Registered Structural Engineers Committee and the Building Sub-Committee of the Land and Building Advisory Committee were consulted on the proposed control on diesel hammers. They supported the proposal. The construction industry was also informed of the further proposal to extend the control scheme to cover pneumatic and steam hammers.

Advice Sought

- 17 Members are invited to endorse:
- (a) the Noise Control (Amendment) Bill 1997;
 - (b) the revised Technical Memorandum on Noise from Percussive Piling;
and
 - (c) the revised Technical Memorandum for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites.

Planning Environment and Lands Branch
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