

THE HONG KONG HOUSING AUTHORITY**Memorandum for the Housing Authority****Provision of Automated Refuse Collection Systems
for Domestic Blocks in Public Housing Estates
and Home Ownership Scheme Courts****PURPOSE**

To seek Members' approval for the adoption of Automated Refuse Collection Systems (ARCSs) as a standard provision for future public housing estates and Home Ownership Scheme (HOS) courts to enhance their sanitary and environmental conditions.

BACKGROUND

2. Maintaining a high standard of cleanliness is essential in creating a decent living environment for residents living in high-rise and high-population public housing estates and HOS courts. Household refuse is collected daily from door to door, stored temporarily at refuse chambers of individual blocks and carried by litter bins and in the form of junk to outdoor refuse collection points for subsequent removal by delivery trucks. Such a manual process of refuse treatment in an open working environment often engenders nuisances, causes sanitary problems and sometimes becomes a source of complaints.

3. To enhance the sanitary condition and living environment for our residents, the Authority approved in 1991 vide Paper No. BC 121/91 a pilot scheme to install ARCSs in new public housing estates. Subsequently, two contracts were awarded in January and March 1993 to the AB Centralsug and Associated Engineers Ltd. respectively to test the new refuse disposal concept at Fanling Area 47B Phase 1 and Shek Yam East Phase 1. In November 1993, the first contract was further extended to Fanling Area 47B Phase 2 development.

4. The ARCSs at Fanling Area 47B Phase 1 & 2 (Wah Sum Estate and King Shing Court) came into operation in December 1995, followed by the one at Shek Yam East Phase 1 (Shek Yam East Estate) in July 1996. Since then, the operation of the two ARCSs has been closely monitored for evaluation purpose.

EVALUATION OF ARCS

System Performance

5. A diagram illustrating the operation of ARCS is at the **Annex**. In essence, the system provides for automatic sucking of refuse through chutes and underground pipes to a central plant where it is separated, compacted and stored in a refuse container ready for disposal. The exhaust air is discharged to the outdoor through dust and carbon filters or other mechanical means.

6. The two pilot systems have been running smoothly in a clean and tidy manner. With their fully automatic and enclosed refuse transportation system, the two pilot projects have greatly enhanced the living environment. Refuse disposal from individual refuse chambers on a daily basis, block by block, is no longer required. Nuisances such as spills and smell are eliminated. Refuse dumping in the two pilot estates is done in about 2.5 hours a day, a time period well accepted by the residents. System breakdown is

infrequent. The large majority occurred during the run-in period and were chiefly attributable to misuse by cleansing operatives/porters.

Cost Analysis

7. The initial cost per flat of the two trial projects ranges between \$3,800 and \$5,000 and the operating and maintenance cost varies from \$33 to \$38 per flat per month. The relatively higher costs for this better sanitary environment are, however, partly offset by savings made available by the reduction in the size of the refuse chambers, the absence of numerous litter bins and junks, and less labour in disposing refuse.

8. In the pilot schemes, the installation costs of ARCS have been incorporated as provisional sums in the Approved Project Budgets. Appropriate adjustments have been made in the management fees of King Shing Court to account for the system operating and maintenance cost whilst those of Wah Sum and Shek Yam East Estates have been absorbed in the rents.

9. Further cost savings are anticipated if the ARCS is approved as a standard item. On the capital side, greater competition will bring prices down. On the recurrent side, installation in larger estates will achieve economies of scale not possible in the two relatively small pilot scheme estates.

Feedback and Response

10. Response from residents has been positive and there is no adverse feedback on the operation of the two ARCSs from the management perspective. Initial concerns focused on installation and operation costs. These have proved reasonable for the pilot scheme and should drop with more competitive bidding.

11. The success of the two pilot schemes has proved that ARCSs are instrumental to creating an enhanced living environment, something

instrumental to Government 穩 嘅 healthy Living into the 21st Century' campaign.

PROPOSED EXTENSION OF ARCS PROJECTS

12. Given the various advantages of the new system, we propose to adopt it as a standard provision for domestic blocks in our future public housing developments. The ensuing paragraphs set out the implementation details and recommendations for Members' consideration.

Selection Criteria

13. Because of its comparatively high initial cost, it is not advisable to install an ARCS in estates where there is a small number of domestic units such as infill sites, rural areas, school sites, etc. Taking the two pilot projects as a guideline, we consider that a public housing development with more than 2 400 domestic flats should be qualified for the provision. However, there are exceptions -

- (a) sites with inherent topographical constraints, e.g. platforms on rock, great level difference, etc., which cause excessive technical difficulties;
- (b) congested sites where there is insufficient accommodation space for the central plant; and
- (c) sites falling within the Five-Year Moratorium on road opening.

14. To further optimise its initial installation cost, a single ARCS plant should be designed in such a way that it would serve a whole housing development with the plant capacity suitably sized. If the development comprise several phases, special contractual arrangements will be made so

that the same ARCS contractor will enter into a sub-contract with the main contractor of different phases.

Contractor List

15. Apart from the two contractors/manufacturers with pilot schemes job references, there are at least three Japanese firms on the market capable of offering similar installations for our estates. All have undertaken many similar ARCS installations in Japan over the past 10 years. In order to attract more competent contractors to bid for the installation works, the Department will publicise the policy about the adoption of ARCSs for our future developments. We are confident that with the anticipated increase in demand, other established ARCS contractors will join in and compete for the Authority 樓 projects.

Future Management and Operation

16. With ARCS in place, estate residents will be encouraged to dump their household refuse direct into the refuse chute on each floor, thus reducing the workload of the cleansing contractor in carrying out door-to-door refuse collection and enabling the new system to operate at its full efficiency.

17. At the same time, in order to optimise the running cost and avoid the splitting of responsibility between different contractors, a comprehensive package contract comprising the initial installation, subsequent maintenance and operation as well as cleansing service will be developed.

RECOMMENDATIONS

18. Having regard to the lead time for design, tender process, delivery and the installation of equipment, it is recommended that all building projects which meet the above mentioned selection criteria and are scheduled for completion after 1 January 2001 would be provided with ARCS.

19. The Department will also study the feasibility of retrofitting this provision in both existing estates and those under construction. When this can be done at a reasonable cost and does not cause undue inconvenience to residents or delay to project completion, approval will be sought from the relevant Committee.

FINANCIAL IMPLICATIONS

20. For a typical ARCS installation, the initial cost is estimated to be about \$5,000 per flat. This represents a marginal increase of 1.25% in the total project cost. Provision of a sum for ARCS installation as one of the standard items will be made in the Approved Project Budget for a selected development. With the growing competition amongst prospective contractors/manufacturers, it is anticipated that the installation cost of ARCS will drop over time.

PUBLIC REACTION AND PUBLICITY

21. It is believed that estate residents and the general public will appreciate the Authority's efforts to enhance the living environment of public housing estates. Publicity programmes will focus on the betterment of the sanitary environment brought about by the new system. The opportunity will also be taken to promote among residents the awareness of keeping their estates/courts clean and tidy as a quid pro quo to the enjoyment of the rights as tenants or flat owners.

APPROVAL SOUGHT

22. The installation of ARCS is a significant step towards a better living environment, which is a pre-requisite for a healthy living. Measures to change the culture of our cleansing contractors as well as residents are also being contemplated with a view to maintaining a high standard of cleanliness on our estates and HOS courts. At the next meeting of the Housing Authority to be held on 17th September 1998, Members will be invited to approve the recommendation in paragraph 18 to install ARCS as a standard provision for the Authority's development projects.

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