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ACE Paper 7/2006
For Information

Progress Report on the Management of Construction and Demolition Materials

Purpose

This paper reports on the progress in implementing the measures to tackle the problem of construction and demolition (C&D) materials.

Background

2. At the meeting held on 13 October 2003, we briefed Members on the problem of C&D materials and the measures taken to tackle the problem vide ACE Paper 30/2003. In summary, C&D materials are a mixture of inert and non-inert materials arising from construction, excavation, renovation, demolition, and roadworks. The composition of C&D materials changes from time to time as it depends highly on the nature and scale of the construction works that generate the materials. In recent years, the composition of C&D materials is as follows -

(a) *soft inert materials* such as soil, earth and slurry – these materials account for some 70% of all C&D materials, and they can only be reused as fill materials in reclamation and earth filling works;

(b) *hard inert materials* such as rocks and broken concrete – these account for 12 to 15% of all C&D materials. Some can be reused in reclamation works while others can be recycled for subsequent use in construction works, such as granular materials, drainage bedding layers and concrete application; and

(c) *non-inert waste* like metals, timber and packaging waste – these account for 15 to 18% of all C&D materials. Some can be recycled if they are not contaminated while the contaminated ones can only be disposed of in landfills.

3. In general, there is an increasing trend in the quantity of C&D materials generated from local construction activities. In 1995, 11.7 million tonnes of C&D materials were produced. By 2000, the amount reached 13.8 million tonnes. In 2005, the total volume generated reached a record high of 21.5 million tonnes. This is equivalent to filling up the Happy Valley Racecourse to a height of 28 storeys.

4. In managing this huge volume of C&D materials, our primary objective is to prevent the inert materials (also known as public fill) from being disposed of in landfills, which are designed for the disposal of municipal solid waste. Prior to 2002, inert materials could be fully accommodated because there were sufficient reclamation projects to absorb them as filling materials. Owing to the suspension of almost all reclamation projects, the generation of public fill has exceeded demand in recent years (see details at the **Annex**). In June 2001, the Council discussed the subject and agreed to adopt the following strategy to tackle the problem to avoid disposing of the public fill at landfills which will significantly reduce the remaining lifespan of landfills -

- Avoiding and minimizing C&D materials at source through better planning, design and construction management;

- Maximising the reuse of both hard and soft inert materials;

- Recycling hard inert materials;

- Establishing temporary fill banks to stockpile surplus public fill temporarily for later use;

- Introducing Construction Waste Disposal Charging Scheme to provide the economic incentive for waste producers to reduce C&D materials that require disposal.

- Sorting the C&D materials such that only non-inert wastes would go to landfills.

Measures Taken To Tackle the Problem

5. The following paragraphs report on the updated position of measures that we have taken to manage C&D materials -

(a) Avoiding and Minimizing C&D Materials

6. The Government has been taking the lead in avoiding and minimizing C&D materials at source. Currently, all contractors of Government works contracts are required to prepare and implement waste management plans in accordance with our specifications. In particular, they need to prevent generation of C&D materials at different stages of construction works, carry out on-site sorting and implement a trip-ticket system to ensure that different types of C&D materials go to the appropriate reception sites. We have also included environmental performance in the "Pay for Safety and Environment Scheme" so as to provide the contractors with the financial incentive to implement waste management plans and other environmental improvement measures satisfactorily. We have been working closely with the Working Group on Construction Waste under the Provisional Construction Industry Coordinating Board and the industry in encouraging the private sector to do the same.

(b) Reusing Inert C&D Materials in Local Reclamation Projects

7. We have urged all project proponents to use public fill as far as practicable. Owing to various reasons, most of the planned reclamation projects have been suspended or under review, seriously reducing our capabilities in handling public fill. Penny's Bay Reclamation Stage 2 is currently the major local reclamation project which will reuse public fill in the coming years. It is estimated that the project will absorb 23.4 million tonnes of public fill. The intake of public fill commenced in February 2004 and will last until late 2007. To date, there are no committed major reclamation projects requiring public fill after 2007. It is expected that surplus public fill will sharply increase at that time.

(c) Processing/Recycling Hard Inert Materials

8. As at end February 2006, about 6.7 million tonnes of high quality hard inert materials generated from two mega construction projects, namely Route 8

and Site Formation at Choi Wan Road and Jordan Valley, have been delivered to the Shek O and Lam Tei Quarries for processing into aggregates for concrete and asphalt production. We envisage that another 0.8 million tonnes of hard materials will be processed in 2006.

9. Since the commencement of operation in July 2002, the pilot C&D materials recycling plant in Tuen Mun has produced about 0.53 million tonnes of recycled aggregates and rock fills for use in government projects. The pilot plant completed its operation in June 2005 and accomplished its objectives of exploring the properties and viability of using the recycled aggregates in construction. From the experience gained and considering the cost-effectiveness and demand from local construction industry, we have set up crushing facilities in Tuen Mun to produce recycled Grade 200 rock fills for reuse. So far, about 0.11 million tonnes of rock fills have been produced.

(d) Reusing Soft Inert Materials in lieu of Dredged Mud in the Capping Layer of the Contaminated Mud Pits in East Sha Chau

10. We have taken the initiative to use soft inert C&D materials to replace dredged mud for capping of contaminated mud pits at East Sha Chau. The capping layer is an essential part of the mud pits as it prevents the contaminated mud in the mud pits from dispersing. In the past, clean dredged mud from the sea were used for capping. As the soft inert materials are excavated soil, which have similar properties as dredged mud, they can be used to replace dredged mud for the capping work. This initiative will accommodate about 7.2 million tonnes of soft inert materials.

11. To ensure that the soft inert materials are clean and that the operation would not lead to other environmental problems, we have been carrying out a number of measures. For instance, stringent inspection is carried out at the reception facilities and only clean natural excavated soil is delivered to East Sha Chau. The remaining inert C&D materials is delivered to the fill banks for stockpiling. Floating substances, if any, are collected. The Environmental Protection Department (EPD) has been closely monitoring the operation under the Dumping at Sea Ordinance (DASO). We commenced operation in October 2003 and about 4.8 million tonnes of natural excavated materials have been reused as capping material so far.

(e) Establishing Temporary Fill Banks

12. Since the end of 2002, we have been relying on two temporary fill banks at Tseung Kwan O Area 137 and Tuen Mun Area 38[1] to stockpile the surplus public fill temporarily for later use. As at end February 2006, the remaining capacities of the fill banks at Tseung Kwan O and Tuen Mun are about 4 million tonnes and 3 million tonnes respectively. Taking into account the latest public fill generation rate and intake programme by local receptor sites, the remaining capacities will be exhausted by late 2007. In addition, these fill banks are only temporary facilities and need to be cleared to release the land concerned for subsequent development. If no new outlets can be identified before the temporary fill banks are filled up, all the public fill will end up being disposed of at landfills which will significantly reduce the remaining lifespan of landfills.

(f) Reusing Surplus Public Fill in Reclamation Projects in the Mainland

13. Following the Cooperation Agreement signed between the Administration and the State Oceanic Administration (SOA) in March 2004 which has provided a foundation for the accommodation of public fill in Mainland waters, we reached an agreement with the South China Sea Branch of the State Oceanic Administrative (SOA(SCSB)) in June 2005 on the implementation details to ensure that the use of public fill in reclamation projects will not cause any environmental problems. The details include material specifications, delivery requirements, inspection and control measures.

14. According to the agreement on the implementation details, public fill to be delivered to Mainland reclamation sites shall not contain any hazardous materials. Physical, chemical and radioactive tests of the materials are required and the acceptance criteria of the material quality are stipulated. Apart from the annual testing of inert C&D materials in the fill banks, regular sampling and testing of the materials at the Mainland reclamation sites will be conducted.

15. There is a monitoring mechanism to ensure the proper delivery of public fill to the designated Mainland reclamation sites. The quality of materials received will be checked before loading onto barges. Monitoring devices under

[1] The capacities of the two fill banks at Tseung Kwan O and Tuen Mun are 10.8 million tonnes and 7.5 million tonnes respectively.

DASO will be installed in all barges transporting inert C&D materials to guard against illegal dumping during transportation. In addition, supervisory staff from both CEDD and SOA(SCSB) will verify the quality of materials in barges to prevent disposing unsuitable materials in the reclamation sites.

16. Environmental monitoring at a regular interval in the reclamation sites will be carried out by SOA(SCSB) to monitor the effects of the reclamation activities to the surrounding environment and propose mitigation measures if necessary.

17. Statutory requirements of both Mainland and Hong Kong shall be complied with under the delivery scheme. The contractor for transporting public fill to the Mainland will be responsible for the application of permits from the SOA and EPD under the DASO. Transportation of materials to Mainland can only commence after obtaining the appropriate permits from both the Mainland and Hong Kong authorities.

18. In January 2006, SOA(SCSB) designated a trial reclamation site in Guang Hoi Wan (廣海灣) of Taishan (台山) to receive public fill from Hong Kong. We are now preparing the tender documents to suit the trial scheme with a view to inviting tenders in the second quarter of 2006.

19. Upon implementation of the delivery scheme, all surplus public fill delivered to the fill banks or barging points will be directly loaded onto barges for delivery to the reclamation site. At present, there remains only one temporary public fill barging point at Quarry Bay to accommodate public fill in Hong Kong after decommissioning of barging points at Kai Tak and Sai Ying Pun in February and June 2005 respectively. Upon expiry of the land allocation of the Quarry Bay Barging Point in mid-2007, we plan to replace it by the permanent barging point at Chai Wan. It is estimated that the Chai Wan Permanent Barging Point can handle public fill generated from Hong Kong Island up to year 2016.

20. We will also make use of the opportunity to clear the stockpiled materials from the two temporary fill banks. Upon clearance of the fill banks, we plan to set up and operate two permanent C&D materials handling facilities, each comprising public fill barging point, construction waste sorting facility and inert hard C&D materials recycling facility, at Tseung Kwan O Area 137 and

Tuen Mun Area 38. It is expected that the barging points can cater for public fill generated from Kowloon and New Territories up to year 2011. We will closely monitor the generation of public fill to determine the need of setting up more barging points.

(g) Introducing Construction Waste Disposal Charging and Sorting of C&D Materials

21. The introduction of construction waste disposal charging which commenced on 1 December 2005 provides an economic incentive for developers and construction contractors to reduce C&D materials. We believe this measure would help encourage the construction industry to minimize the generation of all types of C&D materials in the long run. As part and parcel of the charging scheme, two sorting facilities have been set up in Tuen Mun near West New Territories Landfill and Tseung Kwan O (next to South East New Territories Landfill) to facilitate reuse and recycling. Some haulers have asked for the setting up of a sorting facility near North East New Territories Landfill. We are considering the justifications and feasibility of the request and have drawn up a number of options for further study. The implementation of the charging scheme will be reviewed in mid-2006.

Environmental Protection Department
March 2006