

Construction and Material Waste Management

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Editorial

The construction industry consumes huge amounts of natural resources and produces a significant quantity of Construction and Demolition (C&D) wastes. For example, in 2004, about 20 million tonnes of C&D waste was generated in Hong Kong, of which 12% was disposed of at landfills and 88% at public filling areas. The amount of C&D waste generated was about four to five times of that of municipal solid waste (i.e., domestic + commercial + industrial wastes). From 1993 to 2004, the annual generation of C&D waste in Hong Kong has more than doubled. The management of C&D waste has become a major environmental issue in Hong Kong in many other cities including those in Mainland China. There are growing interests in many parts of the world in reusing C&D waste by the construction industry. In addition to shortage of land for waste disposal and increasing cost of landfilling, environmental protection and conservation of natural aggregate resources are the main driving forces for the recycling of C&D waste.

In Europe, Japan and other developed countries, recycling of building materials started from the end of World War II when bricks and other materials, which were recovered from the ruins of war, were utilized for reconstruction. However, other than in Japan, recycling of C&D waste as a means of sustainable use of materials started in Asia only fairly recently. Among the C&D waste, concrete rubble makes up the largest proportion besides excavated soil, and hence its recycling is most important. Although the use of recycled C&D waste as road sub-base is quite common in a few European countries, many laboratory and field studies have shown that the size fraction of the concrete rubble corresponding to coarse aggregate can be satisfactorily used as a substitute for natural aggregates in concrete. Research and experimental efforts, including those published by Waste Management on the use of recycled aggregates for different concrete applications, have been conducted by many researchers and it has been proven that high quality concrete products could also be produced with recycled aggregates. A number of European countries, Japan and a few state agencies in the United States have already modified

their specifications to make provision for the use of recycled aggregates in different construction projects. However, there are some drawbacks in using recycled aggregates: for example, they have to be separated from other demolition debris before use, and special care is necessary to ensure they are not contaminated [1-5].

As a result, a lot of potentially recyclable materials in the C&D waste stream are disposed of at landfills and dump sites. However, due to increasing concerns about environmental protection and sustainable development, many countries are introducing legislation and policy measures to encourage the use of recycled aggregates. These incentives to the construction industry often come in the form of higher landfilling costs and taxes, and impose of taxes on the use of virgin aggregates and hence more incentives towards the investments in C&D waste sorting and recycling facilities and for the production and use of recycled aggregates. These policies are particularly well established in Europe.

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