

Chapter 5

Research and Technology

Highways Department continues to focus researches on environmentally-friendly technologies, such as incorporating recycled materials into our road pavements and street furniture, as well as reducing noise generation from works.

Hot-in-place Recycling by Thermal Patcher

Thermal patcher is a truck-mounted plant for heating up and softening the existing asphalt in defective area using infra-red radiation. The softened asphalt is then compacted with additional virgin asphalt to create a seamless reinstatement. Its application has been stipulated in all of our road maintenance contracts since 2009 for minor asphalt pavement repairs up to 2.5m².

In 2011, the use of hot-in-place recycling in a larger scale was introduced in our road maintenance contracts for resurfacing works of area up to 100m² on road sections. This method recycles the existing asphalt, which significantly reduces the generation of waste and the use of new asphalt as compared with the conventional resurfacing method. It also generates less construction noise from the works.

In view of its comparatively higher cost than the traditional method, its application is mainly for repairing deteriorated pavements of area less than 100m² on road sections subject to stringent geometric, traffic and/or noise constraints. With its satisfactory performance in conducting road preservation works, this technology was also included in our road maintenance contracts that commenced in April 2012.



Thermal Patcher in operation

Paving Blocks with Recycled Glass

With the success in the site trials and the support of the Development Bureau and Environment Bureau, the use of concrete paving blocks with 20% to 25% recycled glass cullet by weight of the total aggregates have been specified in road maintenance contracts. The performance of concrete paving blocks with recycled glass is satisfactory and is similar to that of the conventional concrete paving blocks. This requirement in using recycled glass in concrete paving blocks in our road maintenance contracts will continue.



Paving Blocks with Recycled Glass

Synthetic Gully/Channel Grating

The synthetic gully grating is composed of recycled materials and its manufacturing process does not induce air pollution. The use of synthetic gully grating has been incorporated into the road maintenance contracts commenced in April 2011 and afterwards as an alternative option to traditional cast iron grating, while its long term durability will continue to be observed. Since April 2012, synthetic channel grating composed of recycled materials has also been incorporated into our road maintenance contracts as an alternative option to traditional cast iron grating.



Synthetic Gully/Channel Grating

Recycled Asphalt Pavement

Highways Department has stipulated the mandatory use of 10% to 15% Recycled Asphalt Pavement (RAP) in bituminous materials in road maintenance contracts since 2008. Since then, further research studies and site trials on using higher RAP contents have been conducted. With the positive results, the RAP amount in wearing course and base course have been increased to the range of 20% to 30% in three road maintenance contracts commenced in 2012 and afterwards. This mandatory use of RAP in our road maintenance contracts will continue.



Recycled Asphalt Pavement