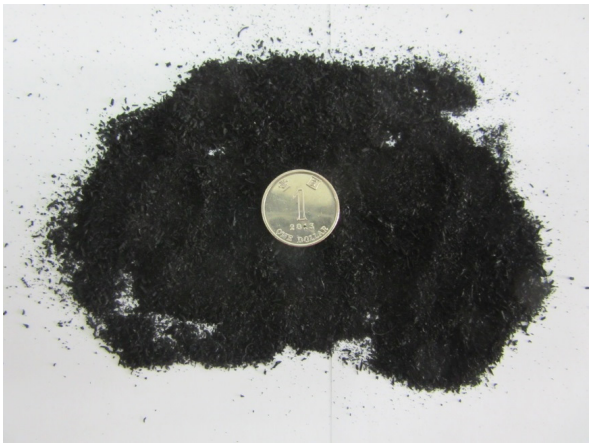
Research & Technology

We make every effort on our researches on environmentally friendly technology, such as application of rubberized asphalt, use of "thin surfacing" and recycled aggregates for full depth sub-base in carriageway.

Rubberized Asphalt

Rubberized asphalt is a special type of road paving material utilizing crumb rubber recycled from waste tyres as an additive for enhancing the asphalt properties. With proper mix design and well-controlled production, the site performance of rubberized asphalt has been proven successful in overseas applications. Under a vision of bringing in the environmental and engineering benefits of this new initiative, HyD and EPD are actively collaborating with local academia and engaging relevant stakeholders to explore its feasibility under local working environment. After ironing out the technical issues relating to plant modification, material production and field operation, trials will be launched to further assess the application potentials of this new material.



Crumb rubber recycled from waste tyres as additive to asphalt

Use of Thin Surfacing

Traffic noise is a common challenge faced by many developed cities with dense population and heavily trafficked road network. Hong Kong is no exception. To tackle the issue, low noise road surfacing (LNRS) is one of the practicable engineering measures being adopted locally. Polymer modified friction course (PMFC) has been proven a suitable paving material for roads with smooth running traffic, giving lower road/tyre noise and better driving condition, especially during rainy days. Nonetheless, both overseas and local experiences revealed that PMFC, attributed to its porous nature, is more susceptible to wear and tear making it not a durable LNRS option on low-speed city roads.

"Thin surfacing" at San Wan Road

"Thin surfacing" has been recognized by some overseas countries as a better LNRS alternative for urban roads. Generally speaking, it is made of fine-grained gap-graded bituminous mixtures with thickness not more than 30mm.

While its smooth and optimized surface texture provides a noise reducing property, the aggregate composition and sizing of "thin surfacing" can offer a stronger skeleton to withstand vehicular traffic than its porous counterpart. For evaluating its applicability in Hong Kong, some trial sections have been laid after conducting some laboratory tests on its engineering properties. HyD and EPD are currently working hand in hand to monitor their site performance in terms of durability and noise reducing ability.

Use of Recycled Aggregates for Full Depth Sub-base in Carriageway

Recycled aggregates are hard inert construction and demolition wastes such as broken rock and concrete that can be recycled as aggregates in construction works. They are currently allowed to be used in 60% of the thickness of the sub-base in carriageway to partly substitute natural aggregates. To further enhance environmental friendliness, HyD had conducted studies to review the material performance and the latest development overseas in using recycled aggregates as sub-base. Site trials to assess the performance of full-depth recycled aggregates as sub-base were completed in early 2015. As the site trials have confirmed the suitability of its use, the specification to use full depth recycled aggregates as an alternative for sub-base construction in local distributors and feeder roads has been finalized and included in HyD's new term contracts scheduled to commence in April 2016. We have also forwarded the new specification to other works departments for their use.

Recycled aggregates used as sub-base materials

The surface condition of recycled aggregates after compaction