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## Hot In Place Asphalt Recycling (HIPAR)

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## HOT IN PLACE ASPHALT RECYCLING (HIPAR)

### THE NEED

With limited funds destined to highway maintenance, the need to repair and maintain highways at the lowest cost possible has created a need for cost-effective ways to rehabilitate existing pavements in preference of reconstruction. While traditional methods of resurfacing roadways produce good results, they are time and resource demanding.



FIGURE 1 HOT IN PLACE ASPHALT RECYCLING (HIPAR)

### THE TECHNOLOGY

Hot-In-Place-Asphalt-Recycling is defined as a process of correcting asphalt pavement surface distress by softening the existing surface with heat, mechanically removing the pavement surface, mixing with recycling agent, possibly adding virgin asphalt and/or aggregate and replace it on the pavement without removing the recycled material from the original pavement site.

HIPAR has been used in Canada and Europe. It is now starting to be implemented in the U.S. The recycling of existing asphalt returns the pavement to a near new condition, giving many more years of life at a reduced cost over normal reconstruction processes. Recycling of granular pavements using specialized equipment has led to much better surface finished and consistently good performance in recent years. The additives used in the process are lime, cement, slag, fly ash, and various blends of these materials.

The pavement surface is heated by infrared radiation and milled in two steps to a desired depth, 20-65 mm. The mix of the old asphalt layer can be changed directly by adding virgin asphalt and new type of bitumen or rejuvenator. The two-stage recycling means the sequential heating and removing of two separate layers of asphalt in one continuous operation. Alternatively working widths are 3,5 m and 4,2 m.



## **THE BENEFITS**

HIPAR technology offers tremendous benefits in terms of cost savings in material, labor, and a reduction in duration of the repair activities. Another great benefit from HIPAR is that it can turn a traditionally environmentally damaging process into a process having only minimal environmental effects. Materials savings are realized from the reduction in new asphalt and aggregate. Energy savings result primarily from reduced aggregate haul and drying, and asphalt transportation. Cost savings are greatly influenced by length of aggregate haul and distance from the plant to the job site. Other factors which have a major influence on bid prices are the degree to which contractors in the area are familiar with and equipped for recycling, the size of the State's present and projected recycling program, and State contract procedures.

## **STATUS**

HIPAR technology has been used for some time in Europe and Canada. States like Colorado have started the implementation of HIPAR in their highway renovation and maintenance programs. The equipment required to implement this system is available through several vendors like Pyrotech Asphalt Mfg.Co. Ltd.

## **BARRIERS**

The equipment required to perform recycling operations of asphalt is very costly. This technology hasn't had a great impact yet because of a greater emphasis on concrete pavements over asphalt pavements. HIPAR technology has not been used in any major U.S. Highway until recently (Interstate I-70, Eisenhower Tunnel -- Continental Divide).



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## REFERENCES

1. Pyrotech Asphalt Equipment Mfg. Co. Ltd.

## REVIEWERS

Peer reviewed as an emerging construction technology

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## PUBLISHER

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