

Introduction to Road Materials Engineering

Part 4: Introduction to Surfacing Seals

Presented by SARF

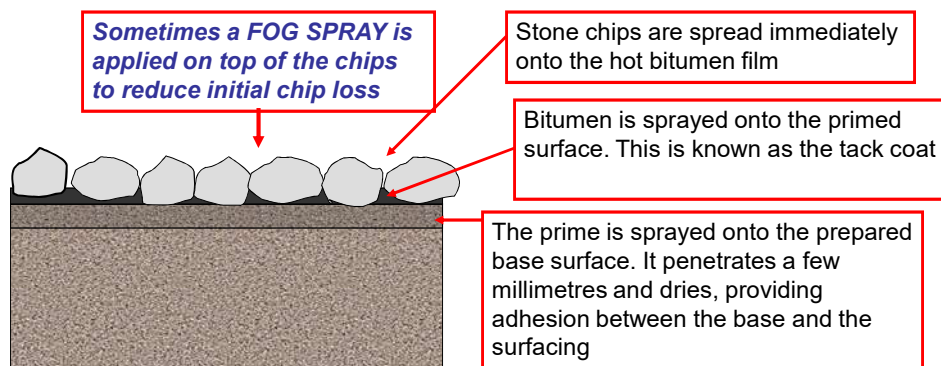
Presenter:
Ron Berkers



Introduction to chip seal surface treatments

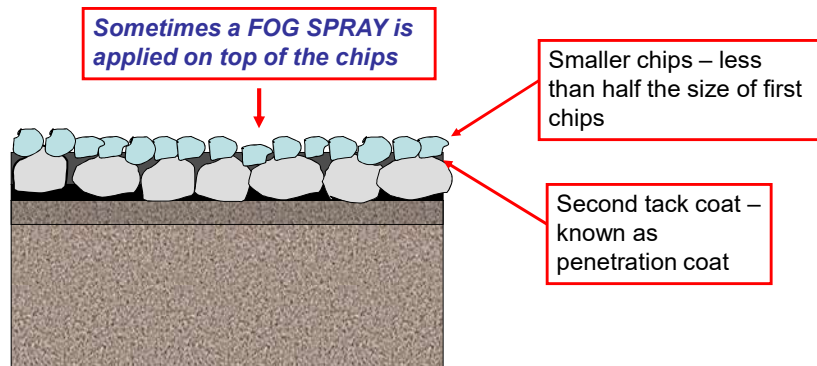
Basics of chip seals

This is known as a SINGLE SEAL:



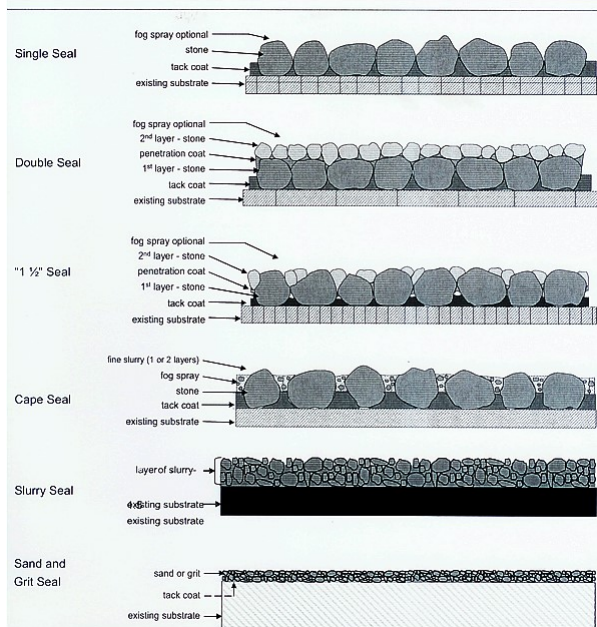
Basics of chip seals

A DOUBLE SEAL consists of two chip applications:



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Seal types covered in TRH3



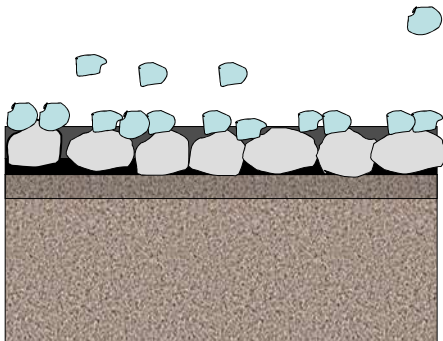
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Click Picture

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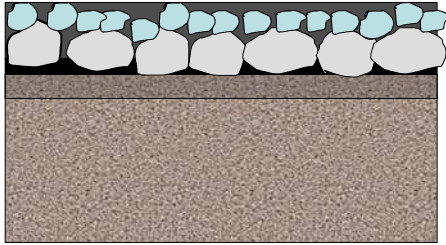
Application rates for the bitumen and chips are of
VITAL IMPORTANCE



If the bitumen application rate is TOO LOW it will result in the loss of chips – insufficient “glue” to hold the chips

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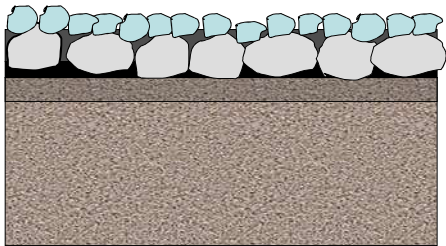
Application rates for the bitumen and chips are of
VITAL IMPORTANCE



If the bitumen application rate is TOO HIGH it will result in fattiness, bleeding, and poor skid resistance

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Application rates for the bitumen and chips are of
VITAL IMPORTANCE



Chip application rates also affect the performance of the seal – too high will result in “whip-off” and too low will result in bleeding

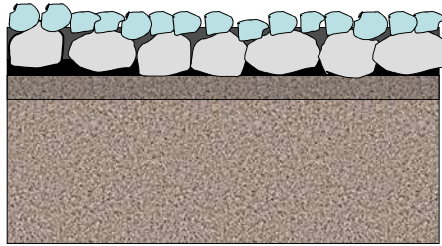
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Tack and Penetration Coats

Tack and penetration coats are sprayed onto the prepared road surface using a CALIBRATED distributor, at the specified SPRAY RATE.

The SPRAY RATE is specified in l/m^2 and can be expressed either as a **HOT** or **COLD** spray rate.

The TEMPERATURE of the binder in the distributor must be within the specified limits for the particular type of binder used.

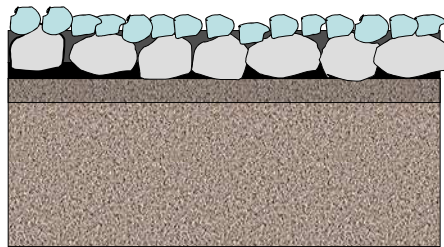


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Application of the chips

The chips are applied at the specified APPLICATION RATE on top of the freshly sprayed tack or penetration coat. A motorised CHIP SPREADER is used on most projects.

The APPLICATION RATE (also known as the “spread” rate) is expressed either as m^2/m^3 or m^3/m^2 .





It is important that the application of the chips is carried out directly behind the bitumen distributor – there should be no delay between the application of the tack or penetration coat and the application of the chips

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Important design inputs

Quality of the chips:

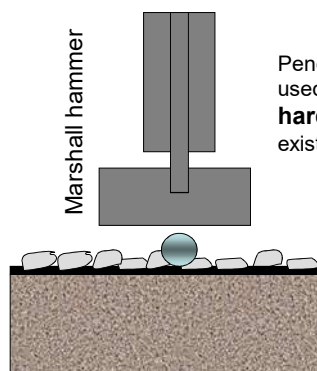
Strength  Flakiness
Durability
Grading
Shape  ALD

Traffic volume and type is extremely important

The grade also effects the design
– reduce spray rates on steep inclines

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Ball Penetration Test



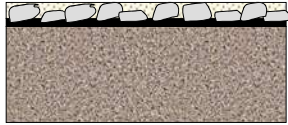
Penetration test is used to assess **hardness** of existing surface



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Sand Patch Test

Sand patch test is used to
assess the existing
surface texture



Pour sand
onto
surface,
level it
flush with
squeegee

