Cracking & Seating of Existing Jointed Non-Reinforced Concrete Pavements – Airfield Pavements in the United Kingdom

Antigo Construction Family of Companies

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Concept

To minimize the extent and severity of reflective cracking in asphalt overlays of existing concrete pavements

Using the “fractured slab” technique:

Cracking & Seating
Principle of Cracking & Seating

Traditional Asphalt Overlay

Cracks are induced in the Asphalt layer due to large movements at the existing bay joints in concrete.

Typ. 350mm

“Crack & Seat” Pavement

Existing concrete cracked into small platelets, reducing movement thus allowing less asphalt to be used.

Typ. >300mm

150mm
Cracking & Seating

Equipment used for Cracking & Seating

8600 Badger Breaker® (guillotine-style breaker)  20-ton Pneumatic-Tired Roller (PTR)

- **Object**
  - To modify the existing characteristics of a rigid pavement into a more flexible structure while retaining as much of the pavement’s stiffness and strength as possible to minimise the required thickness of the asphalt overlay
  - To substantially minimize and delay the effects of reflective cracking

- **Design Criteria**
  - Assess the state of deterioration of the existing pavement in terms of the following to determine the Project’s suitability for cracking & seating:
    - Surface texture
    - Condition of joints
    - Existing cracking and other faults
  - Assess the required asphalt overlay thickness with consideration of the following:
    - Transverse and longitudinal profiles
    - Traffic use
    - Specification of asphalt to be used
    - Type of construction of the drainage
    - Curb depths
Cracking & Seating Process

- Crack the existing pavement using the parameters established during the trial and analysis stage
- Core once every 1000 square meters of cracked pavement to monitor effectiveness recording the results on a core log
- Roll the cracked pavement with a minimum of 6 passes using a 20-ton PTR
Typical Induced Crack

- Core taken from a 450mm thick pavement
- Broken core showing the good aggregate interlock
- Crack should be vertical throughout the depth of the core
# Core Records

**CORE ASSESSMENT FORM - for Crack & Seat**

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Drops to halve: | 1 | Comply? | ✓ |

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Drops to halve: | 1 | Comply? | ✓ |

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Drops to halve: | 2 | Comply? | ✓ |

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Drops to halve: | 2 | Comply? | ✓ |

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*Core position: n/s, centre, o/s = Impact No. (In direction of travel)*

**Crack width: **VF** = very fine, **F** = fine, **EV** = easily visible

 Checked by: ___________________________  

.QME 16 6/1/2006
Testing & Final Analysis

Cores showing any deviation from the normal tight, vertical crack may require a reassessment trial to establish any variations in the existing pavement (e.g. thickness or strength) which may require the resetting of the concrete breaker’s drop height.
Cracking & Seating
London Heathrow Airport
Photograph showing the 1m grid pattern used on the inner taxiways at London Heathrow Airport