Definition

- **Crack filling**
  - The placement of ordinary treatment materials into non-working cracks to prevent/reduce the infiltration of water.

- **Crack sealing**
  - The placement of specialized treatment materials into working cracks to prevent the intrusion of water.

**Definition**

- Working Cracks
  - Cracks having horizontal and/or vertical movement in excess of 1/8".

- Non Working Cracks
  - Cracks having little or no movement between the crack edges.

**Definition**

- Ordinary Treatment Materials
  - PG Binders (64-22)
  - Asphalt Emulsions (unmodified)
  - PG Binders with Fiber
  - Etc.

- Modified Treatment Materials
  - Plasticized Asphalt Material
  - Rubber Modified Asphalt Material
  - Polymer Modified Asphalt Emulsions
  - Etc.

**Crack Filling/Sealing**

- Crack filling/sealing needs to be the first preventive maintenance tool utilized.
- Crack filling/sealing is one of the most cost-effective strategies for extending pavement service life.
- Minimizes intrusion of surface water.
- Reduces the formation of future cracks.
- Expected service life of 2 years.
Crack repairs

- **Sealing**
  - *Working* cracks
  - Prevents the intrusion of water and debris into the crack
- **Filling**
  - *Nonworking* cracks
  - Prevents infiltration of water and to reinforce the adjacent pavement

Flush-Fill  Overband  Reservoir

Joint/Crack Seal Work Categories

1. Resealing Transverse & Longitudinal Joints in JPCP Pavement
2. Filling PCC-HMA Shoulder Joints
3. Routing & Sealing Cracks in HMA Pavements
4. Cleaning & Sealing Cracks in HMA Pavement

Sealant Types

- **ASTM D-6690 Type II** (D3405)
  - Concentrated polymer in asphalt mixture
  - Longitudinal cracks in JPCP
  - Longitudinal PCC/HMA joints
  - HMA pavements

- **ASTM D-6690 Type I** (D1190)
  - Concentrated polymer in asphalt mixture, less than D6690
  - Longitudinal cracks in JPCP
  - Longitudinal PCC/HMA joints
  - HMA pavements

- **PG 64-22 & Fiber** (AC-20 & fiber)
  - 95% PG binder plus minimum of 5% polyester fiber
  - Only used on longitudinal crack between edge of road and shoulder

- **Silicone for**
  - Jointed Plain Concrete Pavements
Equipment & Accessories

- Crack Filling Unit
  - large unit
  - small unit
- Router - if required
- Hot air lance
- “V” squeege
Resealing Longitudinal Joints in JPCP

- Silicone or D6690 for longitudinal joints
- Sealant 3 mm below surface
- Expected life 8 years
Sealing Joints between PCC Pavement & HMA Shoulder

- D6690
- Sealant 3 mm high & 50 mm wide over joint
- Expected life 5 years

Rout & Fill Transverse Cracks in HMA Pavements

- > 6 m (20 ft) between cracks
- <25% of length of crack has secondary cracking
- Apply D6690
  - < 50 mm wide
  - < 1 mm thick
- Expected life - 5 years
Expected Failure

- Bond failure between the sealant and the pavement
- Degradation of the HMA at or near the interface with the sealant

Potential Problems

- Too much over-banding
- Product is too cold
  - (normally 370°F to 390°F)
- Crack is cold and or wet (<40°F)

Description

- Clean and seal only primary cracks, or where directed by the Engineer, along their entire length. Do not treat secondary radial cracks. The Engineer will determine which cracks are to be cleaned and sealed. In this specification, the word crack also means joint.
Questions

Joint and Crack Filler Demo

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Crack Sealing Demo
- Using ASTM D6690 Type II
  - Using a Heat Lance
  - Blow and Go Crack Sealing
  - Routing and Sealing
  - Using a Sealing Shoe
  - Using Detack