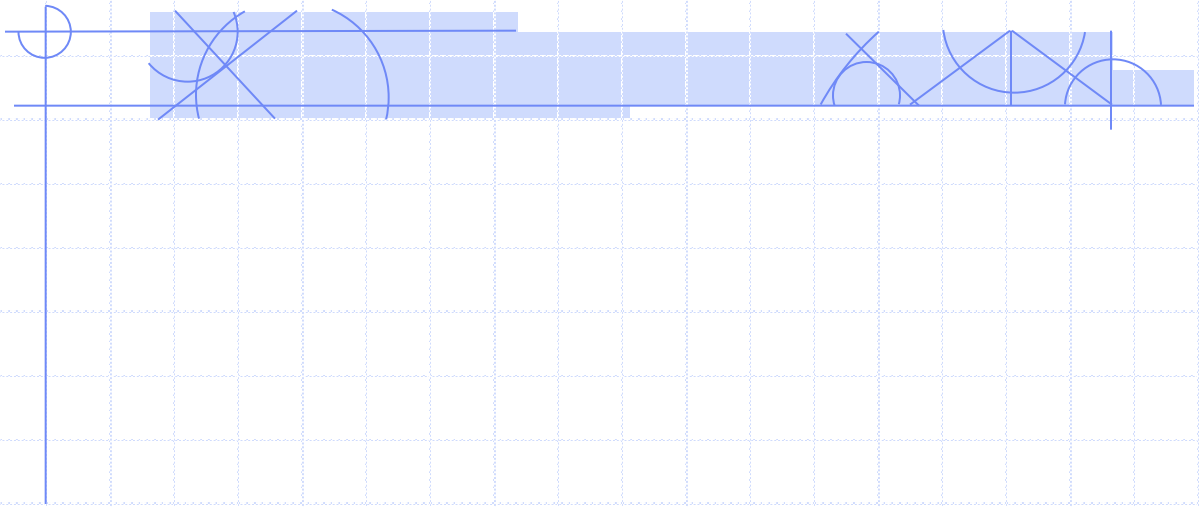
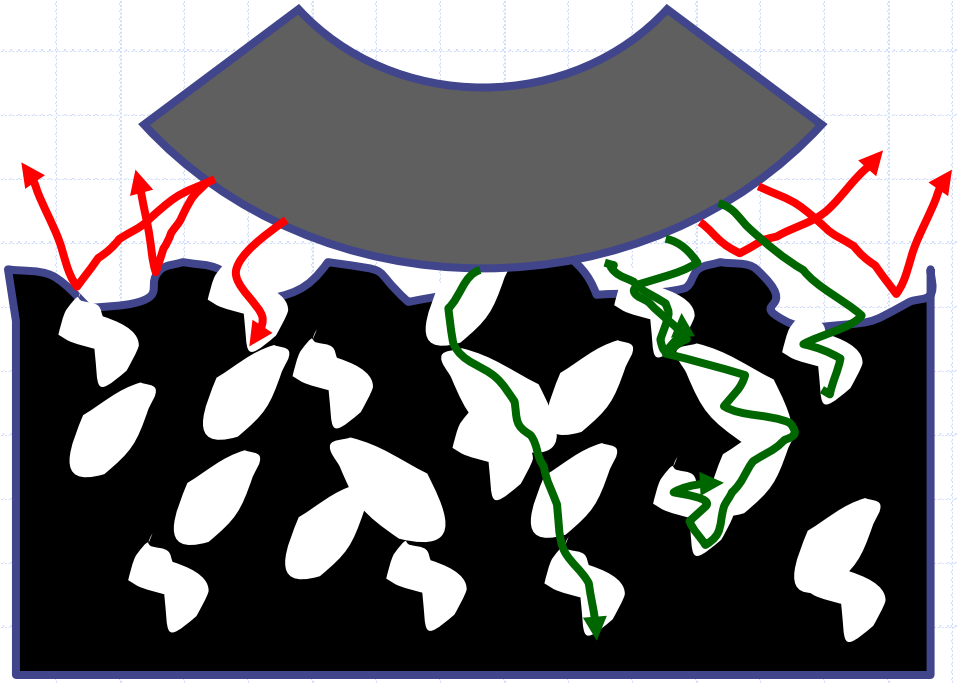
Porous Asphalt Pavement



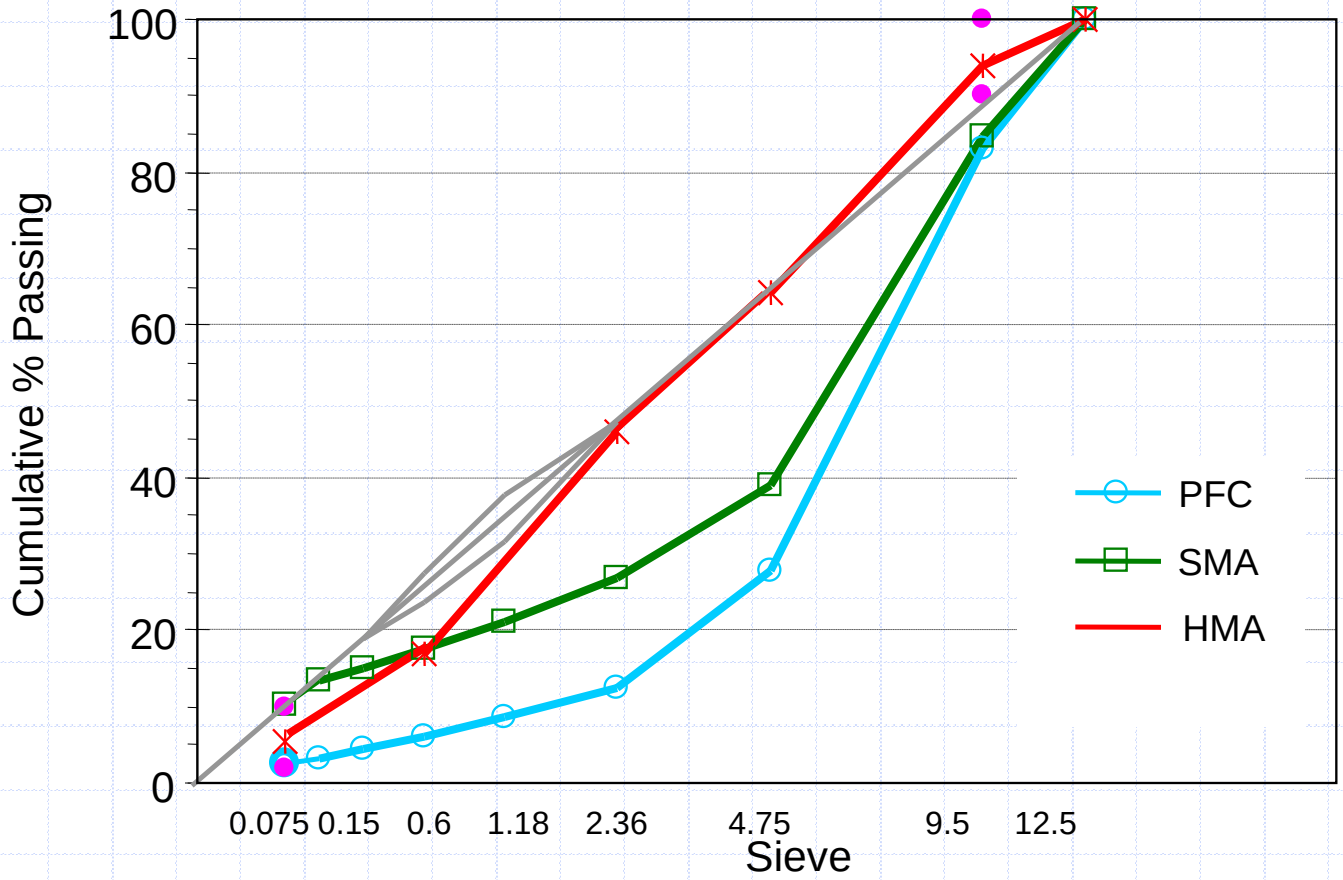
Why Porous Asphalt Surfaces?

- Control noise at the source
- More cost effective than noise walls
  - Noise walls >$1 million per mile
- Impact more people over a larger area
- Offer other benefits, particularly safety
  - Improved friction
  - Reduced splash and spray

Pavement Porosity



Design Gradations – I74, 2003



Construction I74, 2003

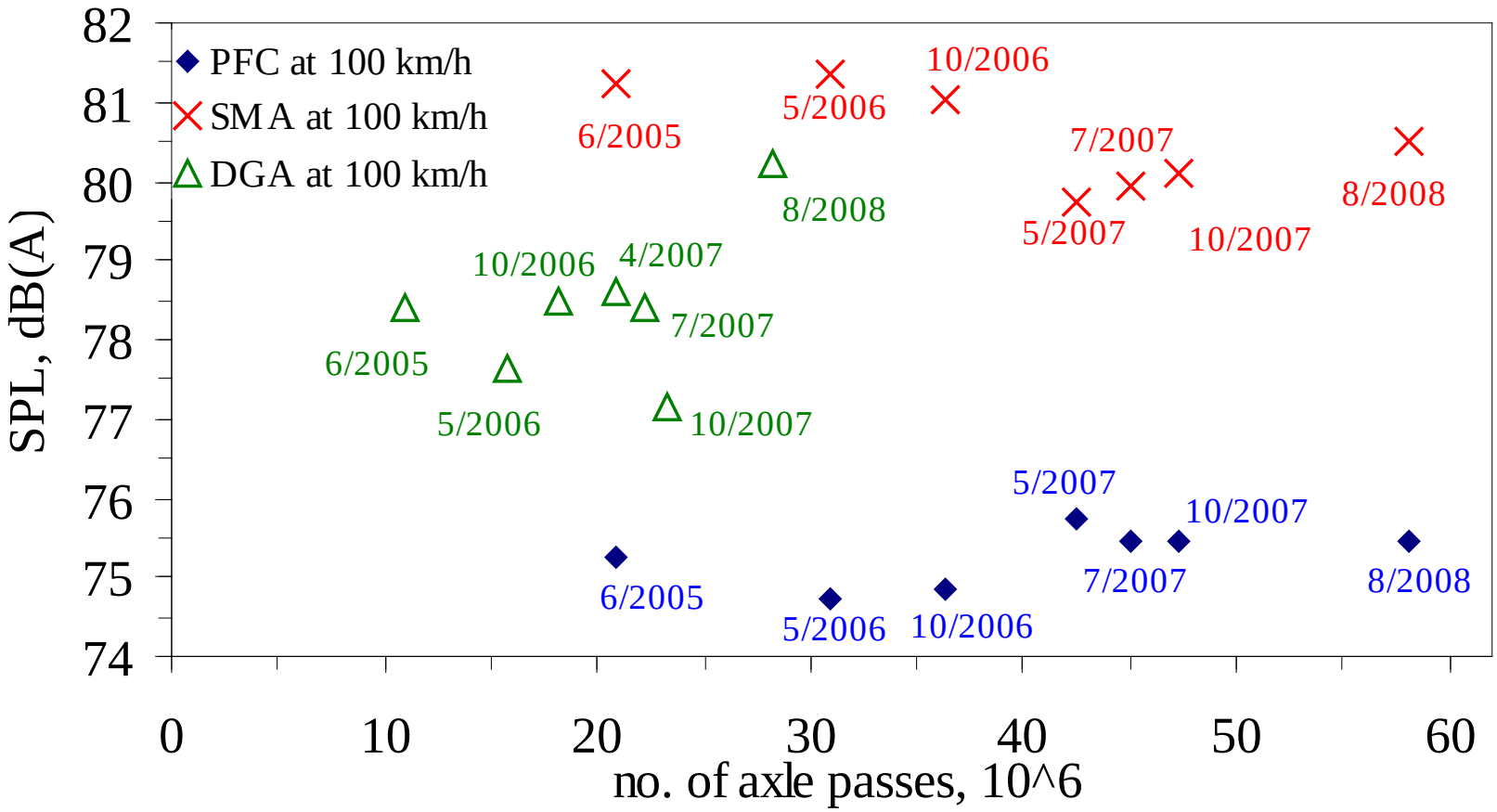

CAT
INGERSOLL-RAND

Conventional HMA

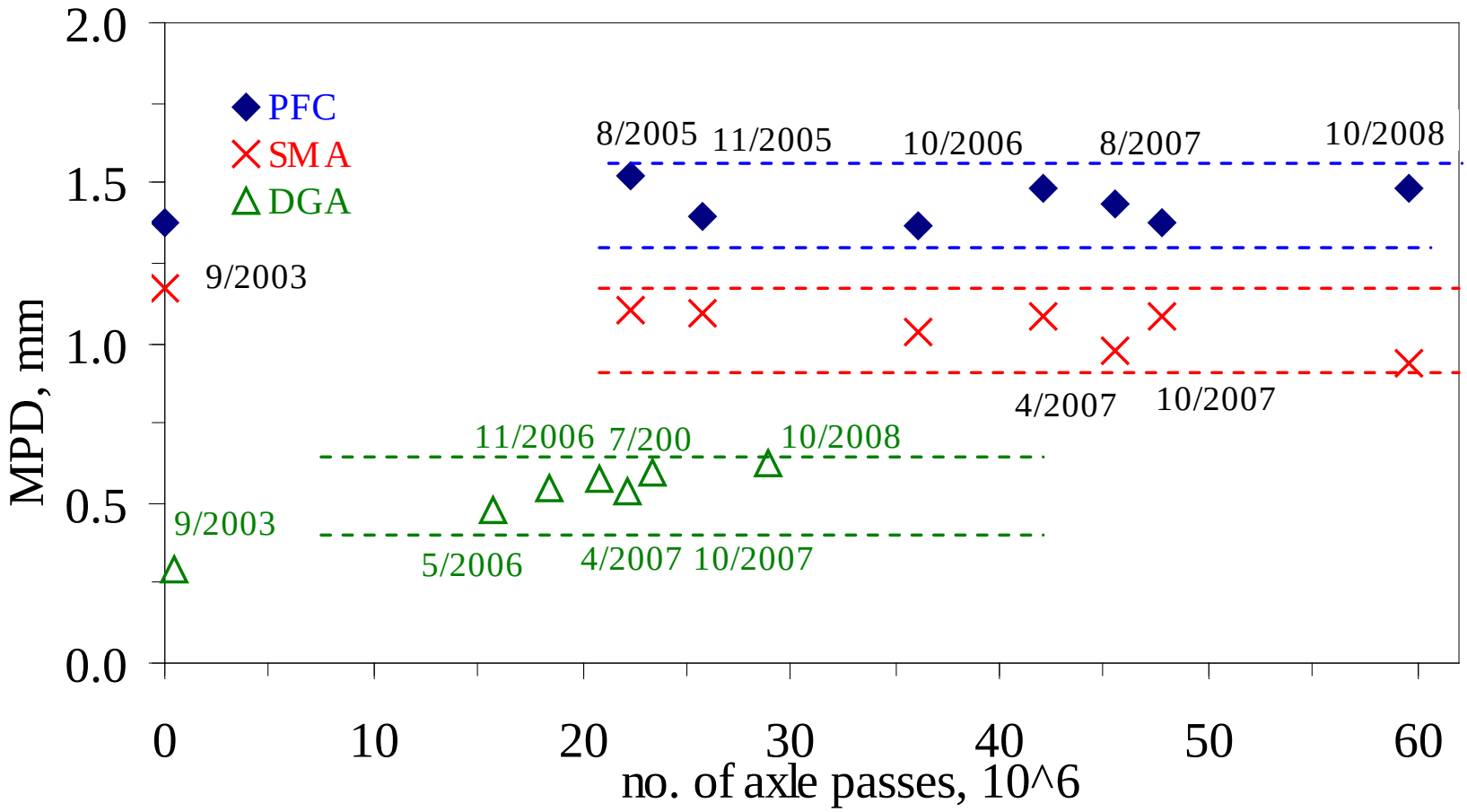
Early Findings

- PFC significantly quieter than SMA or HMA
- In car noise significantly different and lower on PFC
- PFC provides higher macrotexture than SMA and much higher than HMA
- Friction levels are higher for PFC and SMA than HMA
- Significantly reduced splash and spray

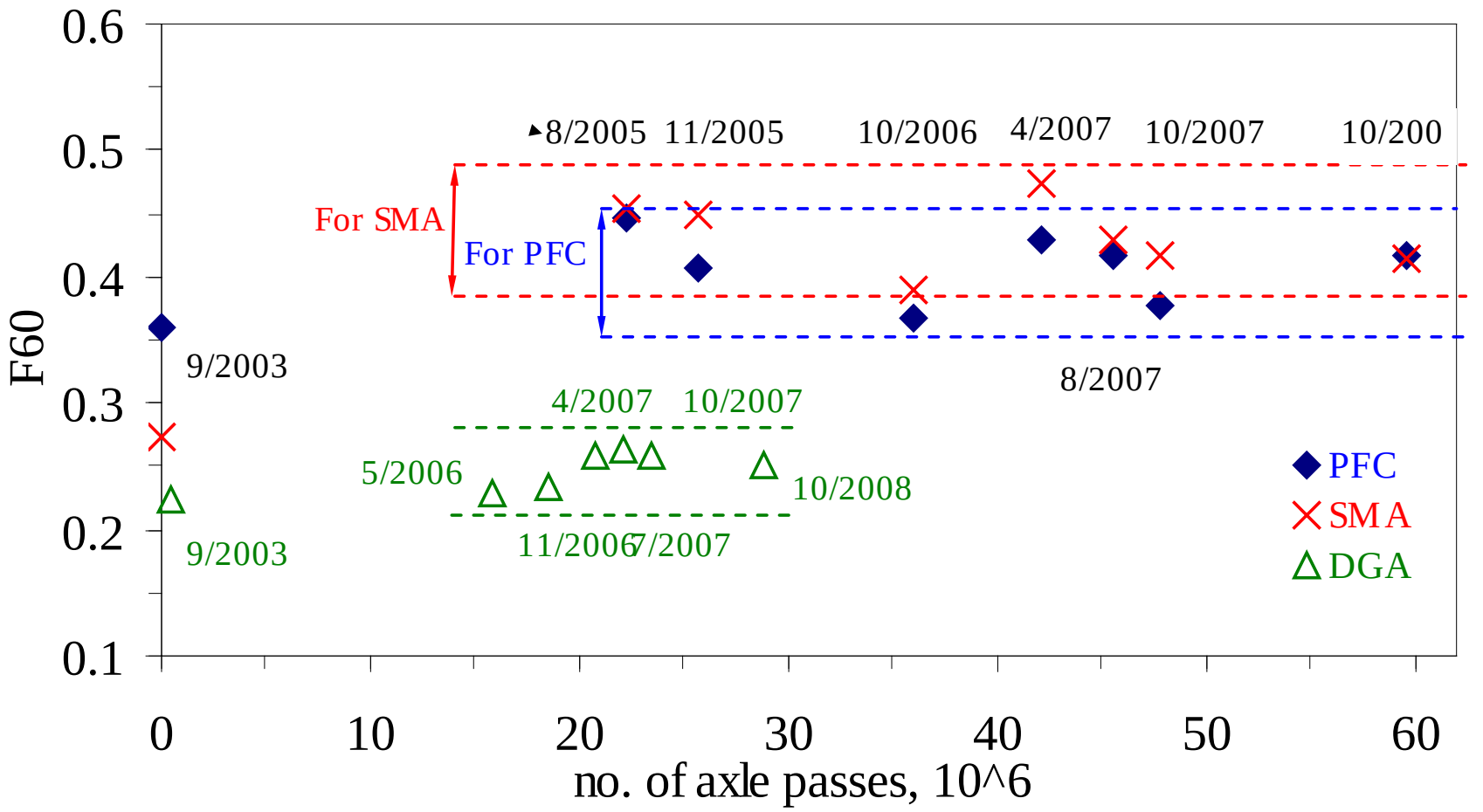
Noise Benefits Maintained



Texture Maintained



Friction (F60) Maintained



Maintenance Issues

- No special maintenance required
- No abrasives used for snow and ice control -- but that is typical for urban areas
- Only difference – more salt applications needed
- Pavement looks wet longer

Implementation

- Limited by FHWA Noise guidelines.
- Noise walls “permanent” but not surfaces.
- FHWA policy may be changing.
- States are applying pressure through research.
- Even if walls are not eliminated, quiet surfaces could allow reduced height, which lowers cost.

Implementation

- Also limited by cost – PFC is a premium pavement surface.
- Cost can be partially offset by using less premium mixture below.
  - Supported by lit review and practice
  - High quality friction agg not required
  - Rut resistant underlying layer
  - Lower stresses and temperatures

Implementation

- May be limited for now but INDOT does have a tool it can use when/if:
  - Special circumstances call for low noise and/or splash and spray
  - FHWA noise policies allow consideration of pavement surface type
  - Use of quieter pavement reduces height of wall