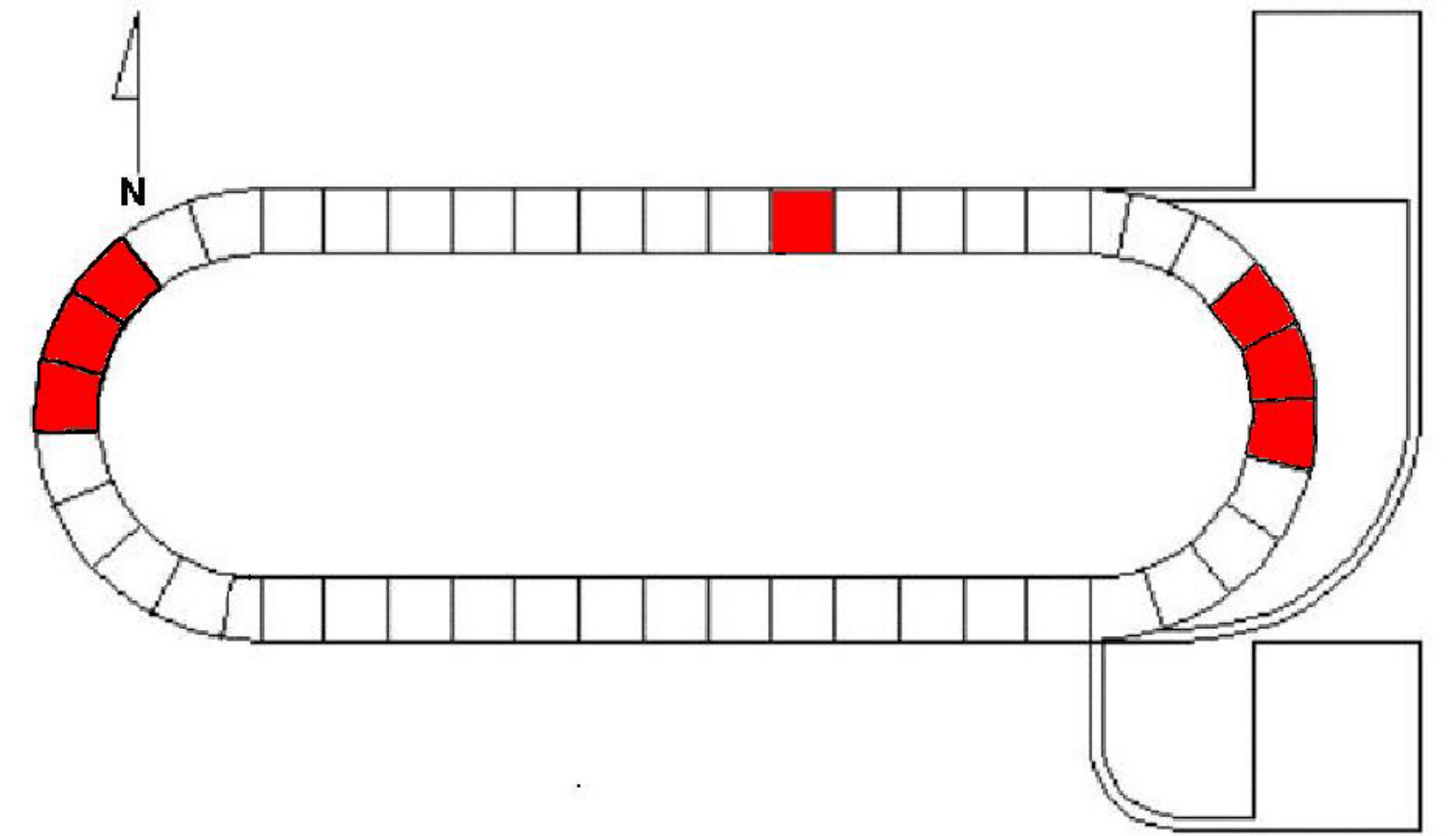
NCAT TEST TRACK

RAP Test Sections



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NCAT Test Track RAP Sections

1. virgin control mix
2. 20% RAP with PG 67-22 virgin binder
3. 20% RAP with PG 76-22 virgin binder
4. 45% RAP with PG 52-28 virgin binder
5. 45% RAP with PG 67-22 virgin binder
6. 45% RAP with PG 76-22 virgin binder
7. 45% RAP with PG 76-22 + Sasobit

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Objectives:

- Determine the appropriate grade of virgin binder needed for High RAP mixes.
- Determine what changes are needed in the procedures used to design High RAP mixes.
- Evaluate the constructability and performance of High RAP mixes.

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Laboratory Testing Plan

- Volumetric properties and in-place density
- Recovered binder properties (M 320)over time
- Dynamic Modulus (TP 62)
- Repeated Load Permanent Deformation Test
- Relaxation Modulus
- APA (TP 63)
- Fatigue (T 321)
- IDT fracture energy
- IDT creep compliance (T 322)

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Test Track Performance Evaluation

- Assess constructability of high RAP mixes
  - Mix design issues
    - Fractionated RAP
    - Meeting volumetric requirements
    - Using blending charts
  - Plant issues
    - Control of two RAP materials
    - Superheating requirements
  - Paving and compaction
- Accelerated Traffic Performance
  - Compare rut depths over time
  - Compare raveling and durability

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Production of Test Track Mixes for the RAP Study

Fractionated RAP

Recycled Mix Production

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Virgin Binders

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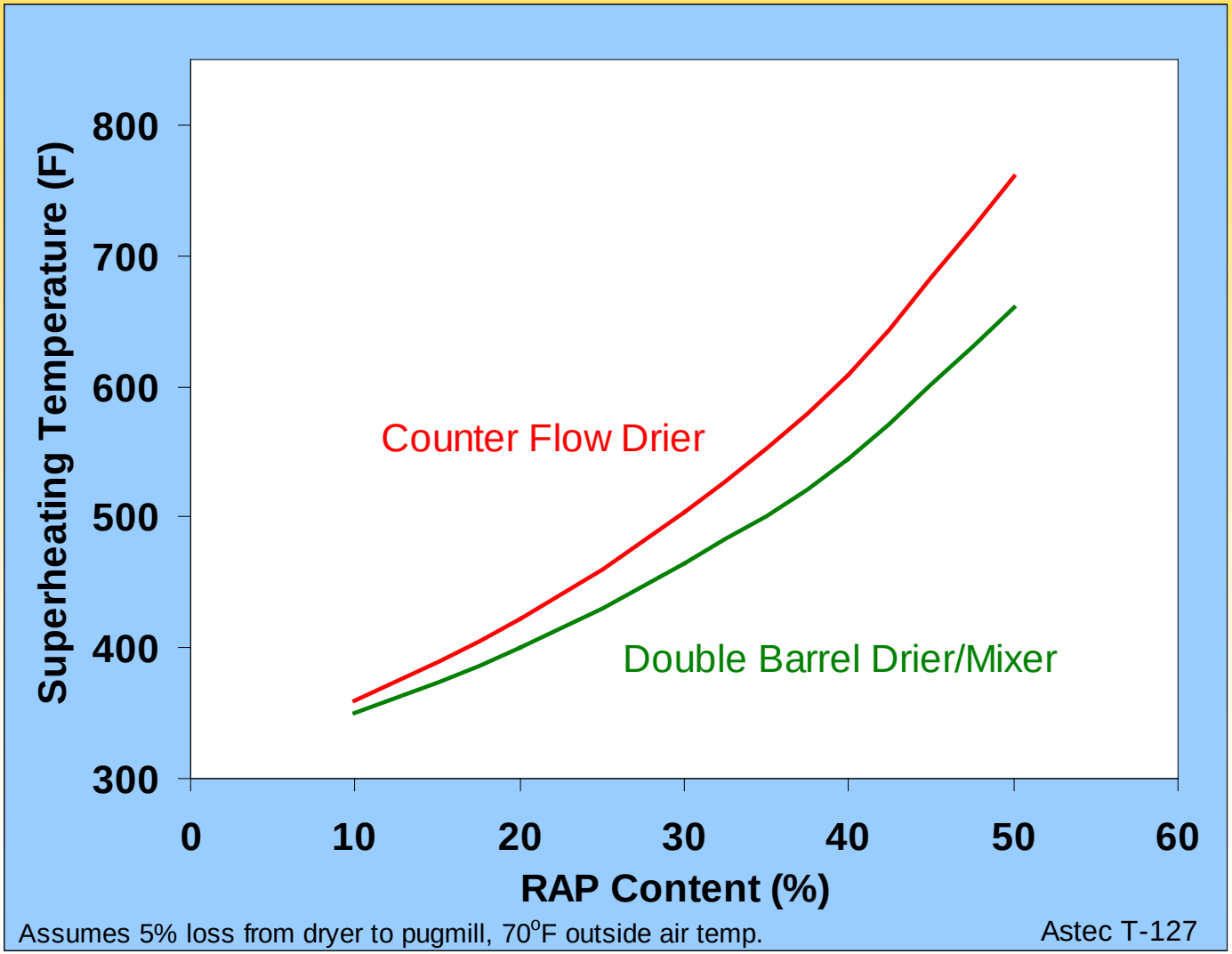
Superheating Requirements



For 300ºF Mix Temperature

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Test Section Construction

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Test Section Construction

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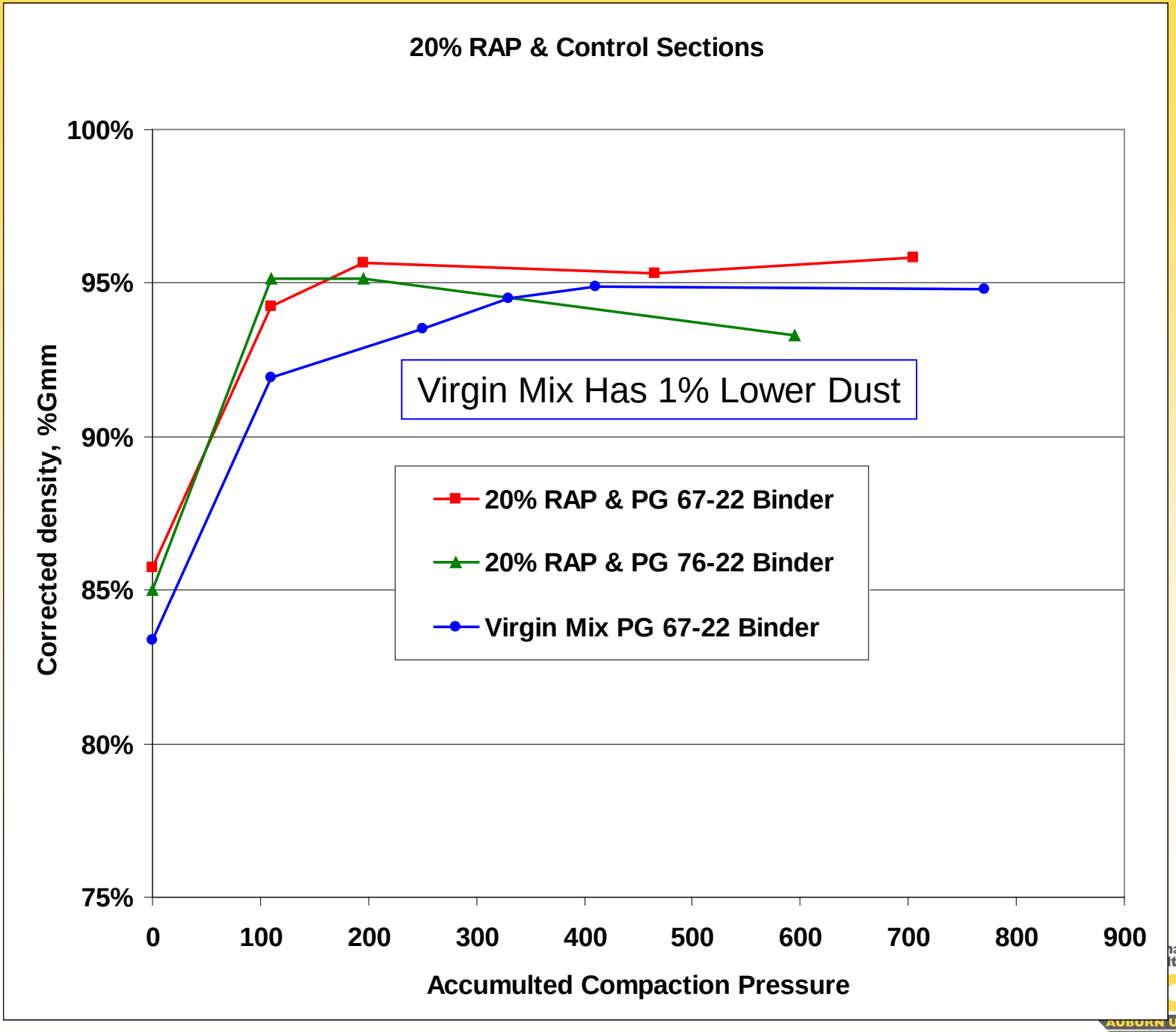
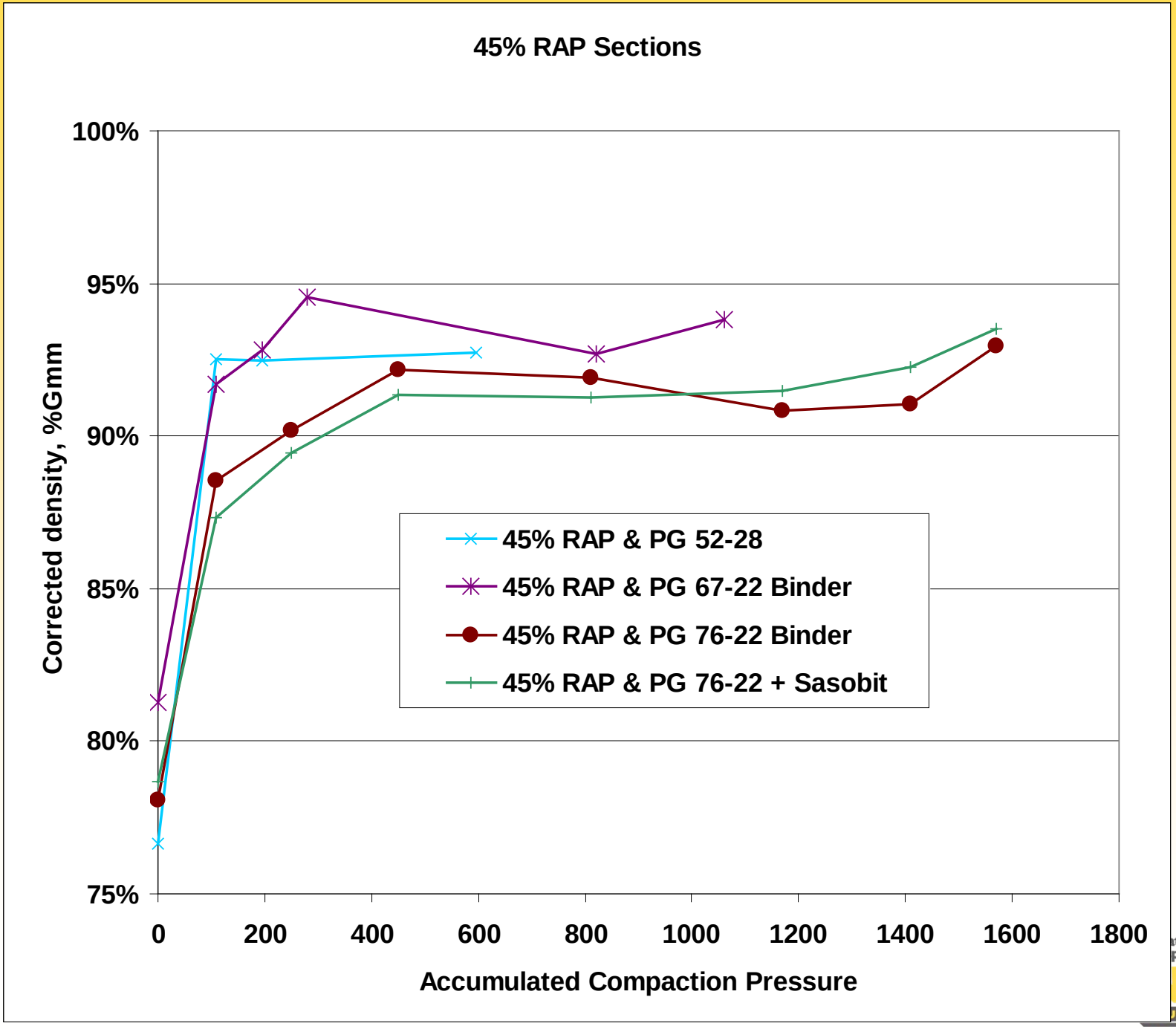

20% RAP & Control Sections
100%
95%
90%
85%
80%
75%
Corrected density, %Gmm
0
100
200
300
400
500
600
700
800
900
Accumulted Compaction Pressure
Virgin Mix Has 1% Lower Dust
20% RAP & PG 67-22 Binder
20% RAP & PG 76-22 Binder
Virgin Mix PG 67-22 Binder


45% RAP Sections
100%
95%
90%
85%
80%
75%
Corrected density, %Gmm
0
200
400
600
800
1000
1200
1400
1600
1800
Accumulated Compaction Pressure
45% RAP & PG 52-28
45% RAP & PG 67-22 Binder
45% RAP & PG 76-22 Binder
45% RAP & PG 76-22 + Sasobit