West Virginia University
Asphalt Technology Program

Skid Evaluation of Asphalt Mixes Status and Plans

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Need for new method for laboratory skid evaluation

- WVDOH currently test aggregate – not mixes
- Method has been successful
- Shortage of availability of aggregates that meet the skid requirements

Requirements for skid testing in lab

a. Sample preparation

b. Polishing

c. Friction test

Requirements for skid testing in lab

- a. Sample preparation
  - Slabs
  - Cylinder
- b. Polishing
- c. Friction test

Simple
- Lab
- Field cores

Requirements for skid testing in lab

- a. Sample preparation
- b. Polishing
  - "rub on the surface to simulate traffic"
- c. Friction test

a. Methods (US)
   a. NCSU
   b. NCAT
   c. Ohio

Requirements for skid testing in lab

a. Polishing Methods (US)
   a. NCSU
   b. NCAT
   c. Ohio

North Carolina State University

- Developed in 1970's
- Only method with an ASTM standard
- Not currently used by other agencies

Requirements for skid testing in lab

a. Polishing Methods (US)

a. NCSU

National Center for Asphalt Tech.

- Developed in 2000's
- Most commonly reported method in current literature
- Most agencies contract with NCAT for testing

Requirements for skid testing in lab

a. Polishing Methods (US)
   a. NCSU
   b. NCAT
   c. Ohio

Akron University for ODOT

- Developed in 2000's
- Commercially available
- ODOT is implementing
  - Five contractors have devices

Requirements for skid testing in lab

a. Polishing Methods (US)
   a. NCSU
   b. NCAT
   c. Ohio

Selected by DOH

Cylindrical samples
Polish 12 samples per run
Not currently used by other agencies
Custom fabrication

Four applications of tire per revolution

NCSU polisher in action

Polishing Co. 1 SP 12.5 skid 8%

Cycles 0 2000 8000

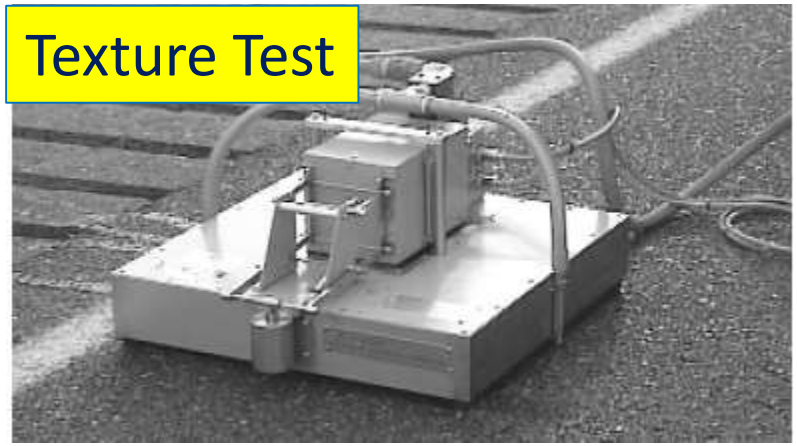
Requirements for skid testing in lab

- a. Sample preparation
- b. Polishing
- c. Friction test

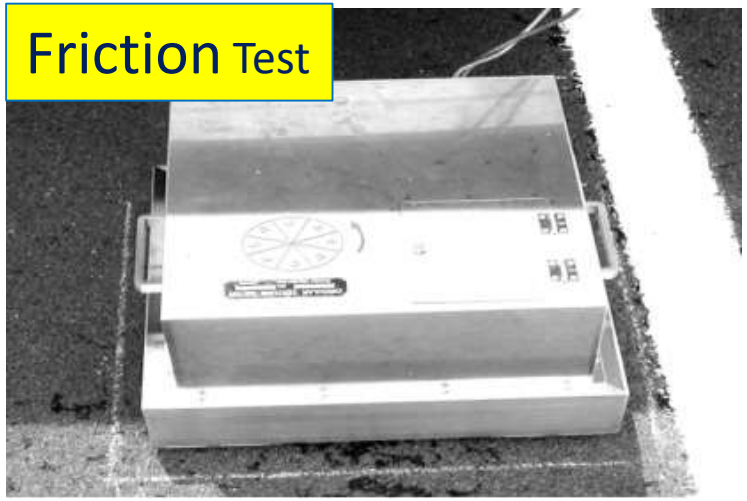
British Pendulum
Dynamic Friction Meter
Circular Track Meter

- NCSU

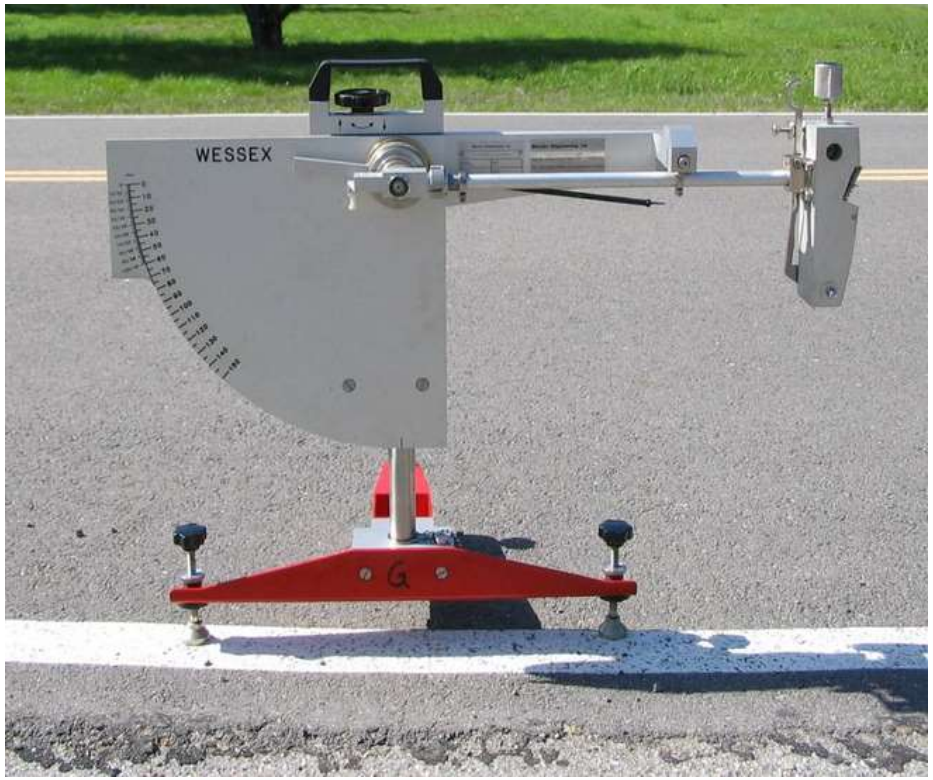
Texture Test



Friction Test

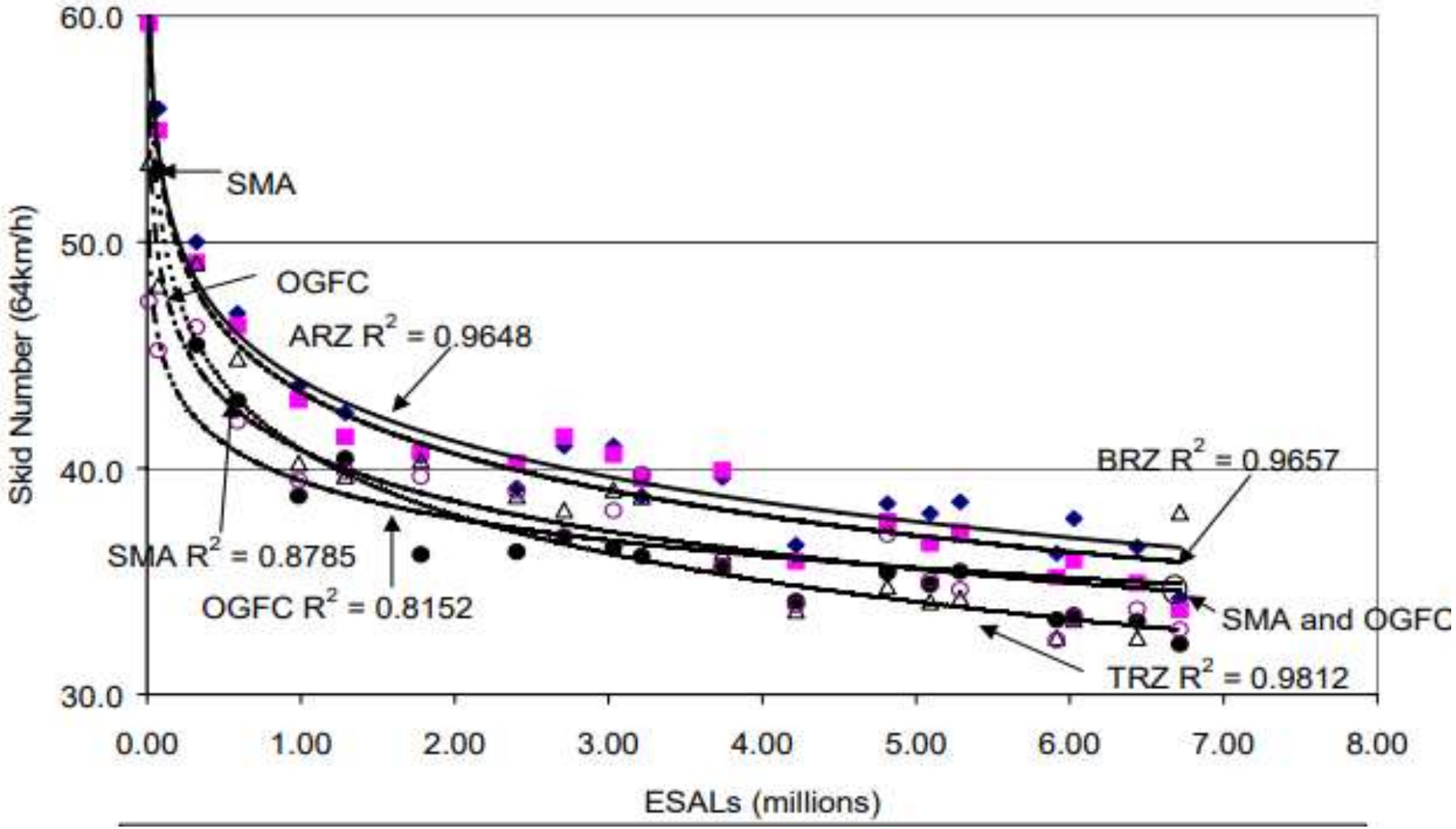


- British Pendulum

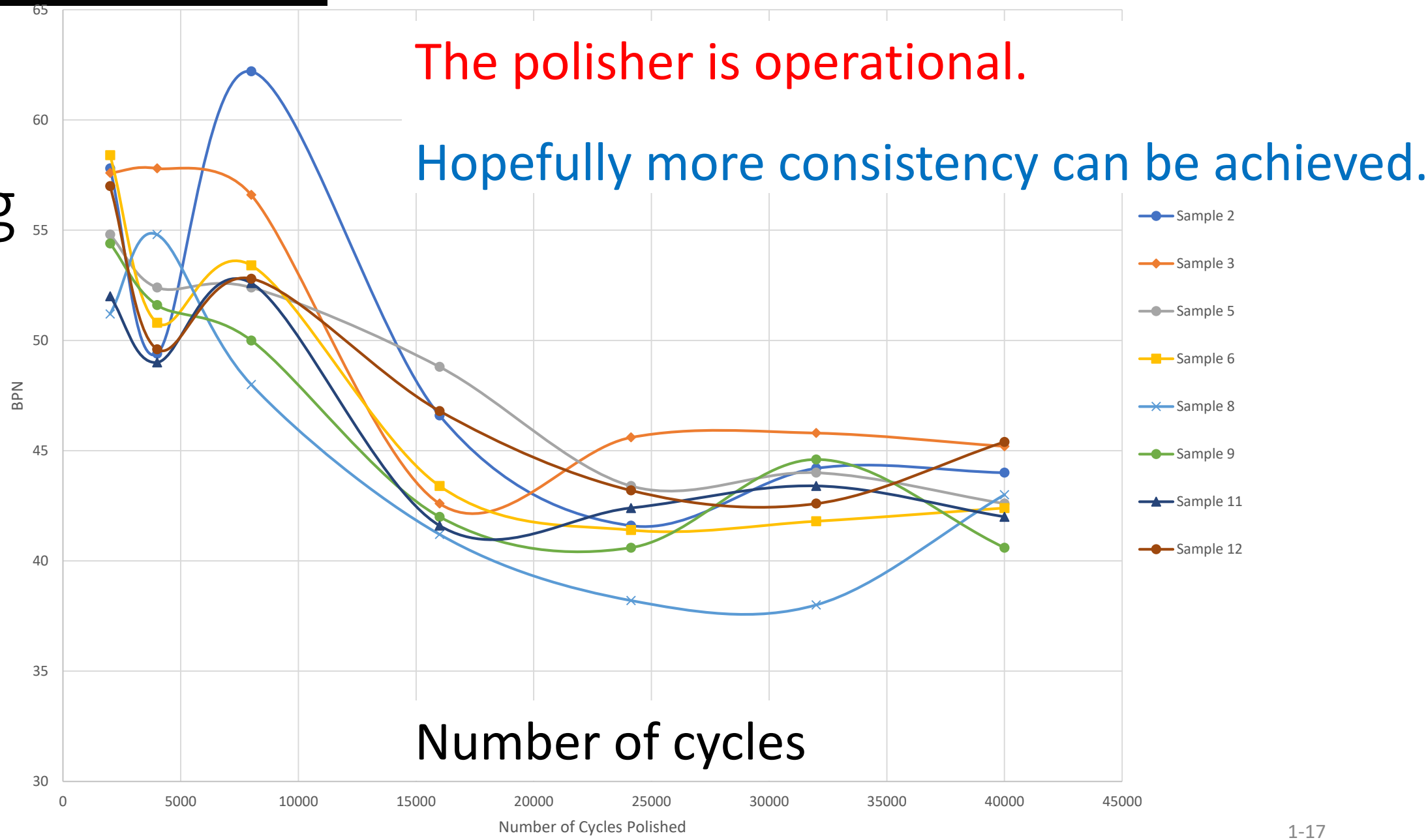


BP in action

Typical results



Shake down testing



The polisher is operational.

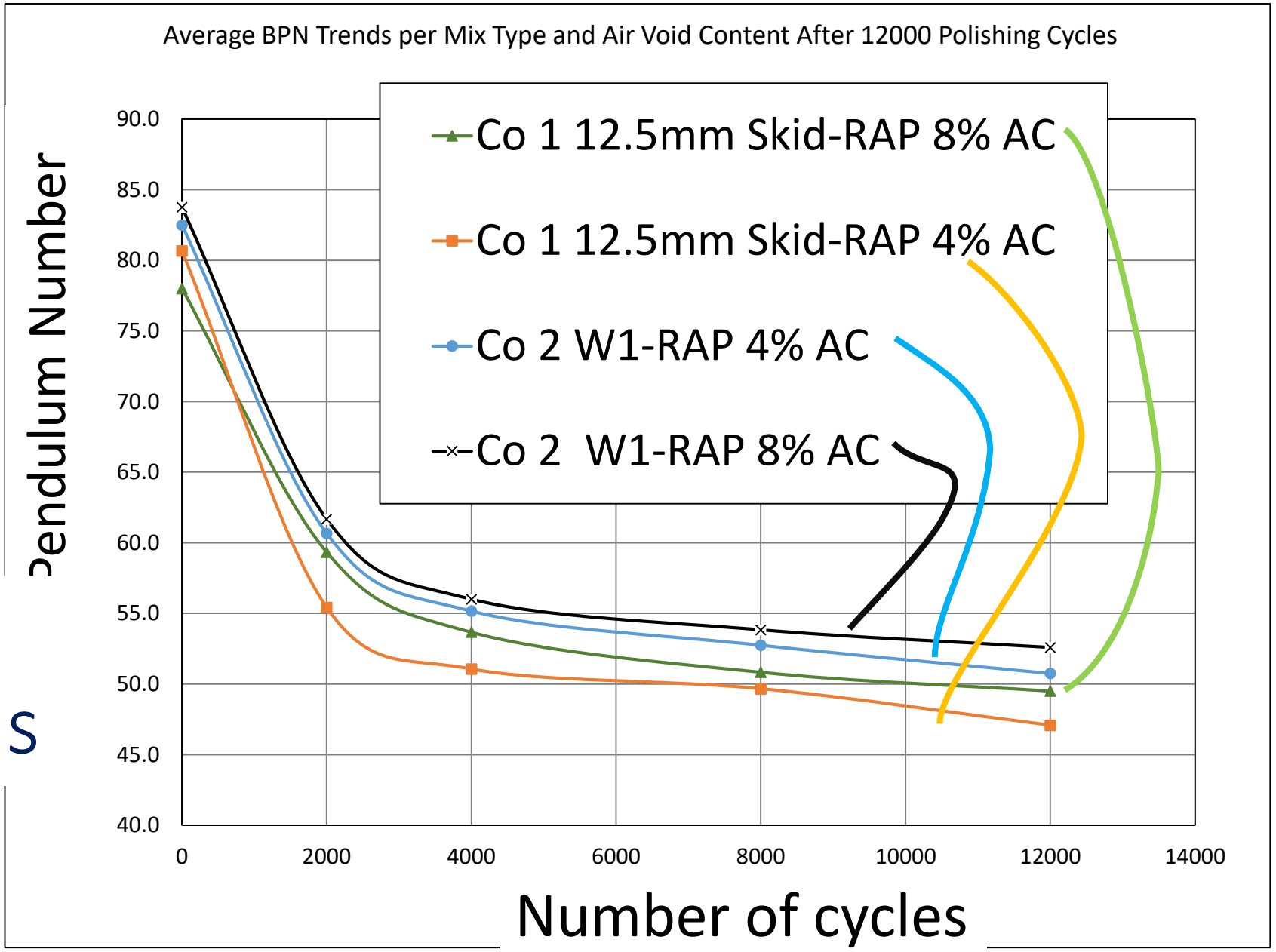
Hopefully more consistency can be achieved.

Number of cycles

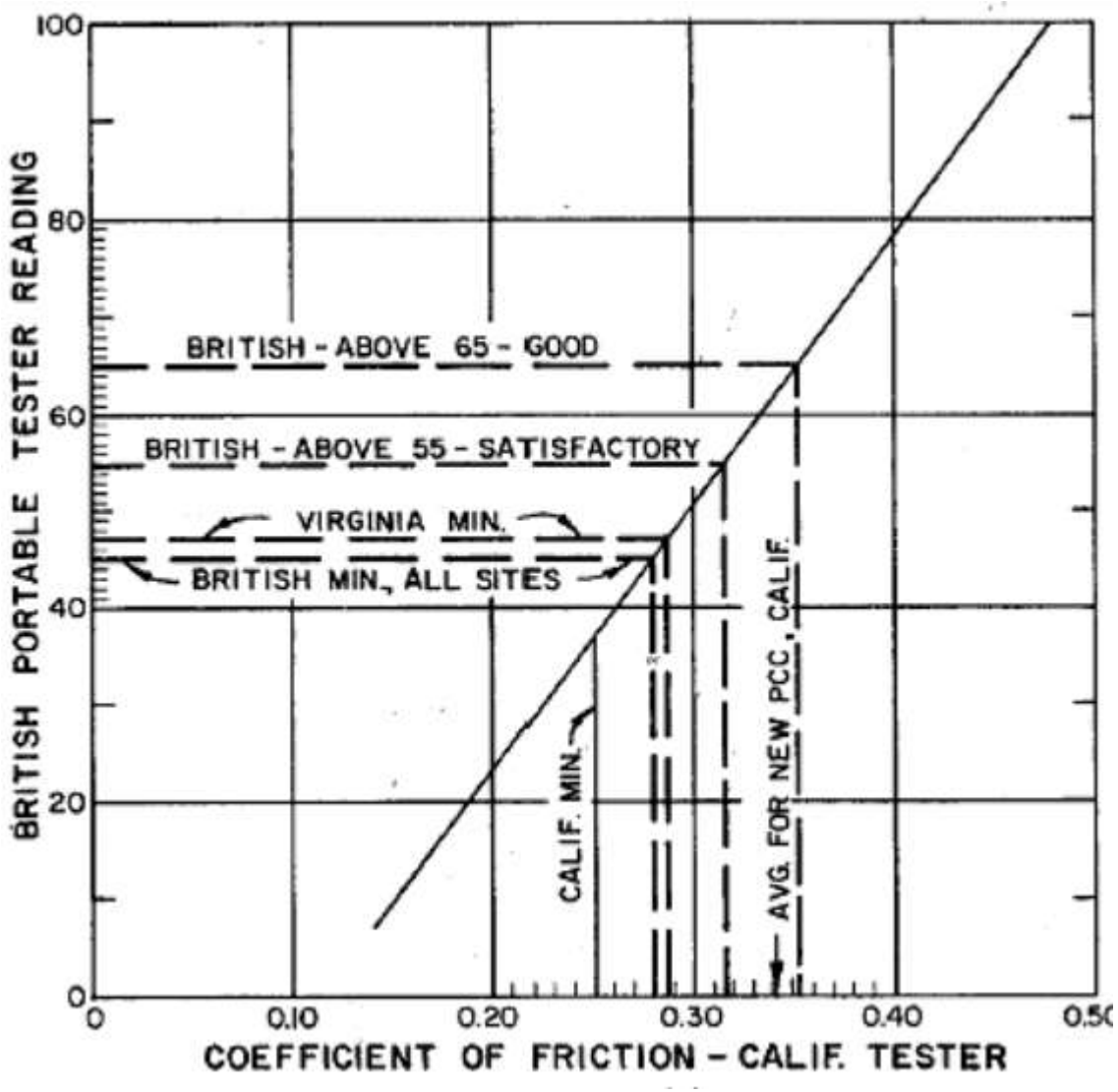
Initial testing

Looks good

48,000 tire applications



What does BPN mean?



British

- >65 Good
- >55 Satisfactory
- 45 Minimum all sites

Virginia 47 Minimum

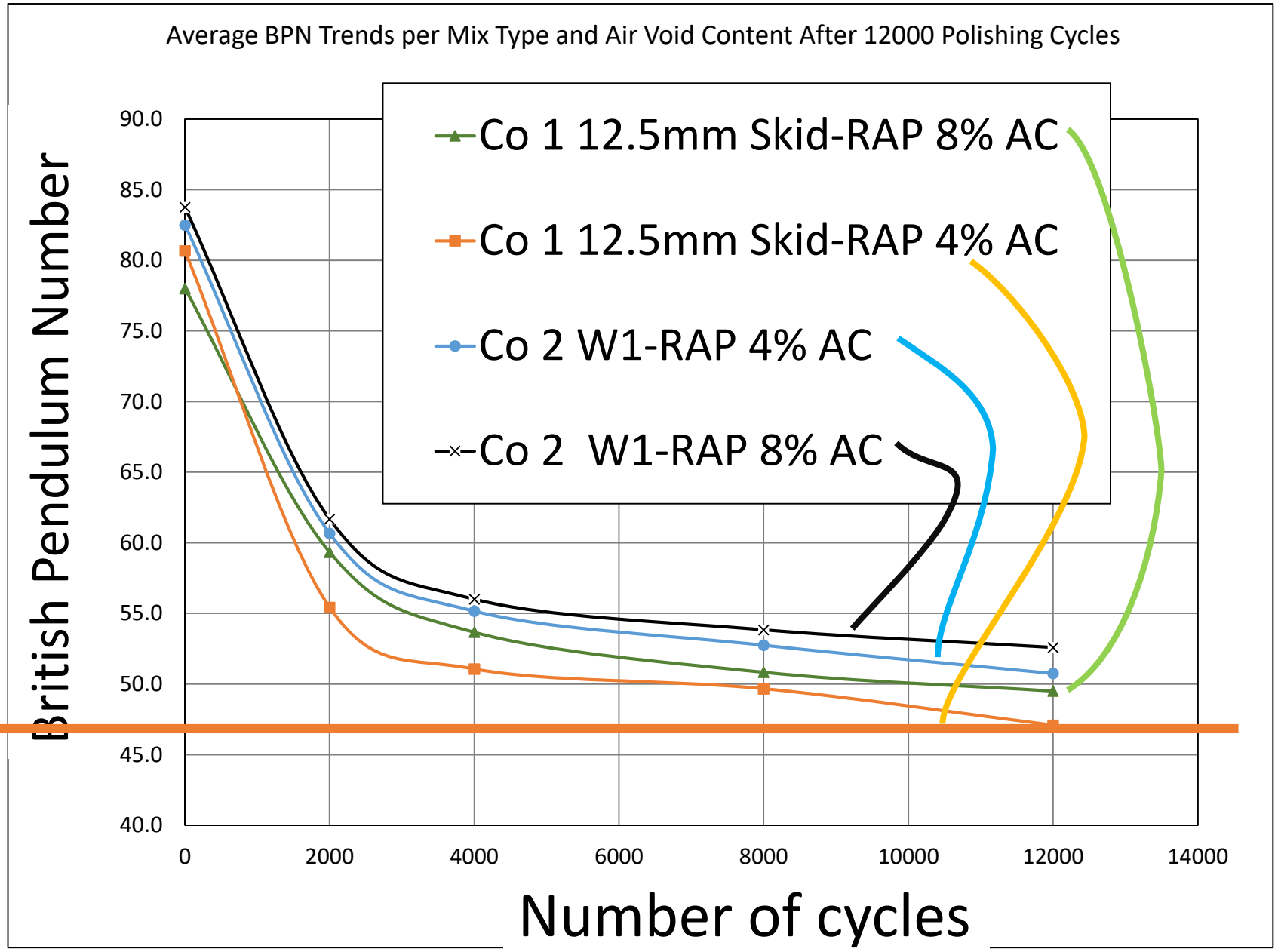
NY 52 Minimum

Original Research 1967

Mean Traffic Speed (mph)	Skid Number (SN)	British Pendulum Number (BPN)
30	31	35
40	33	40
50	37	45
60	41	50
70	46	-
80	51	-

How did we do?

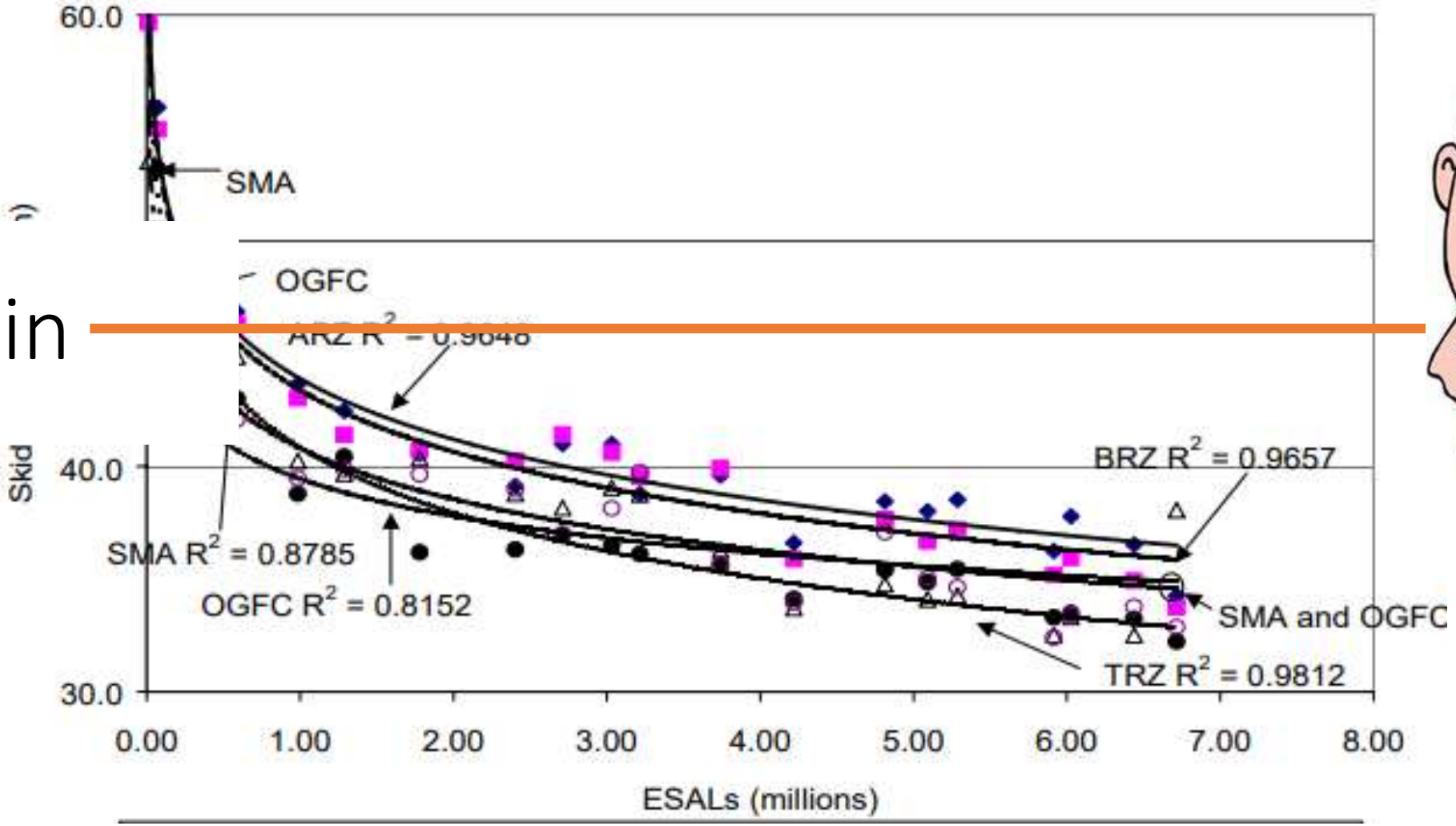
VA min



How did the "typical results" do?

HMM

VA min



Establish Protocol

Polishing

- Tires
  - Pressure
  - Hardness
- Tire toe in angle
- Number of cycles
- Air voids

•Friction measurements

- Water application BP
- Texture measurement?

Testing program

- Evaluation of existing wearing mixes

i. Skid mixes vs nonskid mixes

ii. 9.5 vs 12.5

iii. 4.75???

- Compare laboratory to field

i. Plant mixes vs lab mixes

ii. Lab results vs field results

Work with DOH and input from industry

Next

- More testing
  - Compare mix types
  - Compare aggregate gradations
  - Compare aggregate types
- What do the results mean
  - Important to compare lab and field results
  - Existing pavements
  - New construction

You can ask questions but…

Lets go Herd