A History of Paving at IMS
Asphalt – The KyRock Years...

- **1936** – Asphalt patches applied to portions of turns

- **1937** – All turns completely paved with “Ky Rock”

- **1938** – Short chutes paved

- **1939** – Back stretch paved, but ~1900’ of front stretch still brick
Asphalt – Early Resurfacing...

- **1955** – All existing asphalt portions resurfaced with “Ky Rock”

- **1961** – Remaining bricks covered on front stretch

- **1964** – Back stretch and turn 3 resurfaced

- **1969** – Front stretch and turns 1, 2 and 4 resurfaced
1976

- 1st Complete Resurfacing
- $175,000
- Cracks sealed with AE-150 & sand
- 1/2” Leveling course
  ~2400 tons
- 1” ACBF Slag Surface course
  with AP-5 (60-70 Pen AC)
  ~4400 tons
1988 (12 yrs later)

- 2nd Complete Resurfacing
- Pits also paved
- Extensive treatment of cracks
- 1/2” to 3/4” Leveling course
- 1” ACBF Slag Surface course
  - 9.5% AC 20
  - 50 Blow Marshall
1995 (7 yrs later)

- 3rd Complete Resurfacing
- 1st Time Entire Oval Was Milled
- 1st Use of PG AC (64-34)
- 1/2” to 3/4” Leveling Course
- 1” ACBF Surface Course
- Rehab Strategy to Address Weepers
2004

- 4th (CURRENT) Complete Resurfacing
- Main Oval, Pit Lanes and Warm-up Lanes
- SMA Utilized for Both Lifts
- Extensive Treatment of Longitudinal Joints
Essential Qualities In a Race Track Surface...

• Must be reliable & consistent so drivers have confidence in the “stage” they are racing on:
  • Smooth, no vertical accelerations
  • Surface must not ravel or shove (it simply can NOT lose stability)
  • Joints must not ravel
  • Texture must be consistent

• Surface must dry quickly (impermeability)

• Must control cracking
Goals of 2004 Rehabilitation

- **Longer** Life (1976, 1988, 1995, 2004...)
- **Less** Cracking
- **Less** Permeability (water infiltration)
- Exceptionally **Smooth**
- **Similar** Surface Texture and Friction Characteristics of Existing Road Course
Weepers!
February 2004 – Cracks in 1995 Surface
Top-Down Cracking
Results of 2004 Existing Condition Survey

- Extensive Surface Cracking Due To:
  - Long-term binder absorption by the ACBF Slag CA and FA
- Longitudinal Joints Separated Due To:
  - Shrinkage from long-term binder absorption
  - Low density
- Weeping Due To:
  - Roof water infiltrating structure via longitudinal joints, cracks, voids in the low density surface
Proposed Solutions for 2004 Project

- Mill 2-1/2”
- Replace SAMI
- Place 1-1/2” of 9.5mm Dolomite SMA PG 76-28 / PG 82-22
  - Increase durability of intermediate layer
  - Provide macro-texture to mechanically lock surface to intermediate layer
- Place 1” of 4.75mm Steel Slag SMA PG 76-28 / PG 82-22
  - Provide a durable, high friction racing surface
Proposed Solutions for 2004 Project

- Treat Longitudinal Joints:
  - Reduce raveling and reduce permeability
  - Treat vertical face and across joint

- Use Latest in Paving Equipment Technology to:
  - Increase lane widths
  - Improve compaction
  - Provide necessary smoothness
  - Insure consistent macro-texture
High Density Vögele Screed

Tamper Bar

Pressure Bars
The Experts!
2-1/2” Milling
Milled Surface
1st Lift
1-1/2” 9.5mm Dolomite SMA
Warm-up Load at Start of Day
### 9.5mm Dolomite SMA

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Avg. Core Density (N=34) 94.8% of $G_{mm}$

9,750 Tons 16 Samples
Diamond Grinding (prior to placing surface)
RPE Tack Prior To Steel Slag SMA
Lane 1 – 1” of 4.75mm Steel Slag SMA
Last Lane – 4.75mm Steel Slag SMA
# 4.75mm Steel Slag SMA

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Avg. Core Density (N=25) 94.3% of $G_{mm}$

8,420 Tons
13 Samples
2004 – Waiting for Cars!
How’s It Performing Today?
February 2004
June 2016
July 2016
November 2017

What’s Missing?
You want to crack seal with what?
Tedious and Time Consuming Doesn’t Begin to Describe the Effort it Took!
The
Finished
Product...
Pavement Preservation Continued...

Using RPE
The Tire Dragons...
So...How’s Friction Now?
What Have We Learned?

- Investigate distress issues **thoroughly**
- Mix shear strength is **very important**!
- Utilize **low abs** aggs for durability
- Achieve **low** in-place mix permeability
- Utilize **polymer** mod AC’s and emulsions
- **Follow** known best practices (design, plant and laydown)
- **Everyone** plays a role in QC!
- Have **backup** equipment!
- For future projects, there may be a role for IC and/or WMA Technology...
Thank you!