

# ASPHALT PLANT INOVATIONS

## ***2012 NCAUPG Technical Conference***

February 15, 2012

Hyatt Regency Indianapolis, IN Hotel

Respectfully submitted

**Meeker Equipment Co., Inc.**

**Bill Garrett, Partner**

**1440 Industry Rd**

**Hatfield, PA 19440**

**Office 215 361 2900 ext 160**

**Mobile 267 446 3796**

**[Bill@meekerequipment.com](mailto:Bill@meekerequipment.com)**



# Asphalt Plant Innovations do **not** need to be a scary subject!



# Remember the Good Old Days

Mayer Brothers Erie, PA

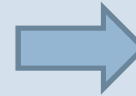


- Cheap Energy
- Less Regulation
- Lower Production
- Easier Binders
- Working Workers
- Fewer Mix Designs
- More Roads to Build

# Improved Plant Stock Piling & Radiant Heat

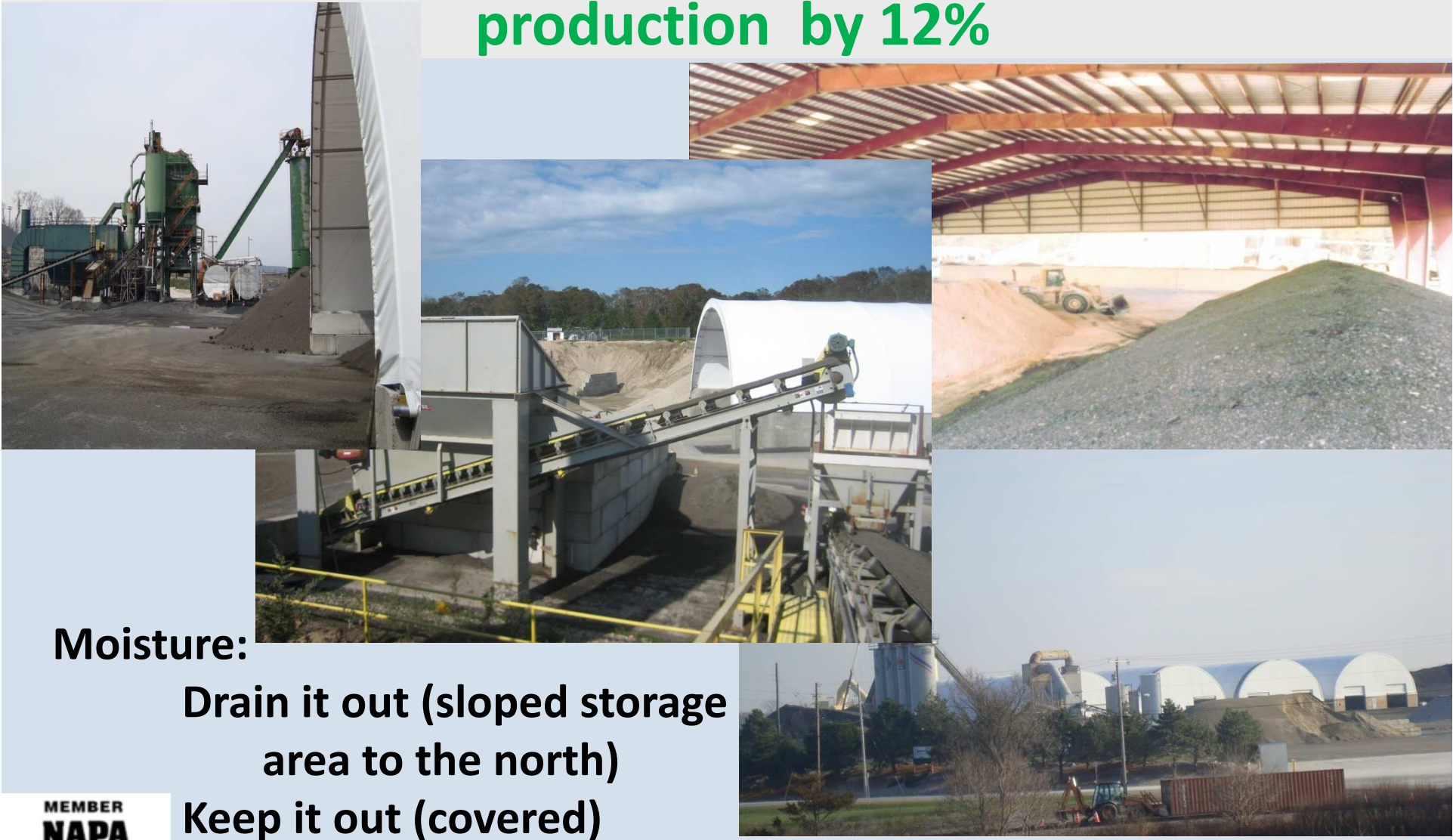


South



- Use of Radiant Heat can reduce drying cost \$\$
- Loader Operator & where to pick from on the pile, higher is better

# Covering Plant Stock Piling Effects Plant Costs \$\$ 1% increase in moisture increase cost or reduces production by 12%



**Moisture:**

**Drain it out (sloped storage area to the north)**

**Keep it out (covered)**

**Evaporate it out (sun)**



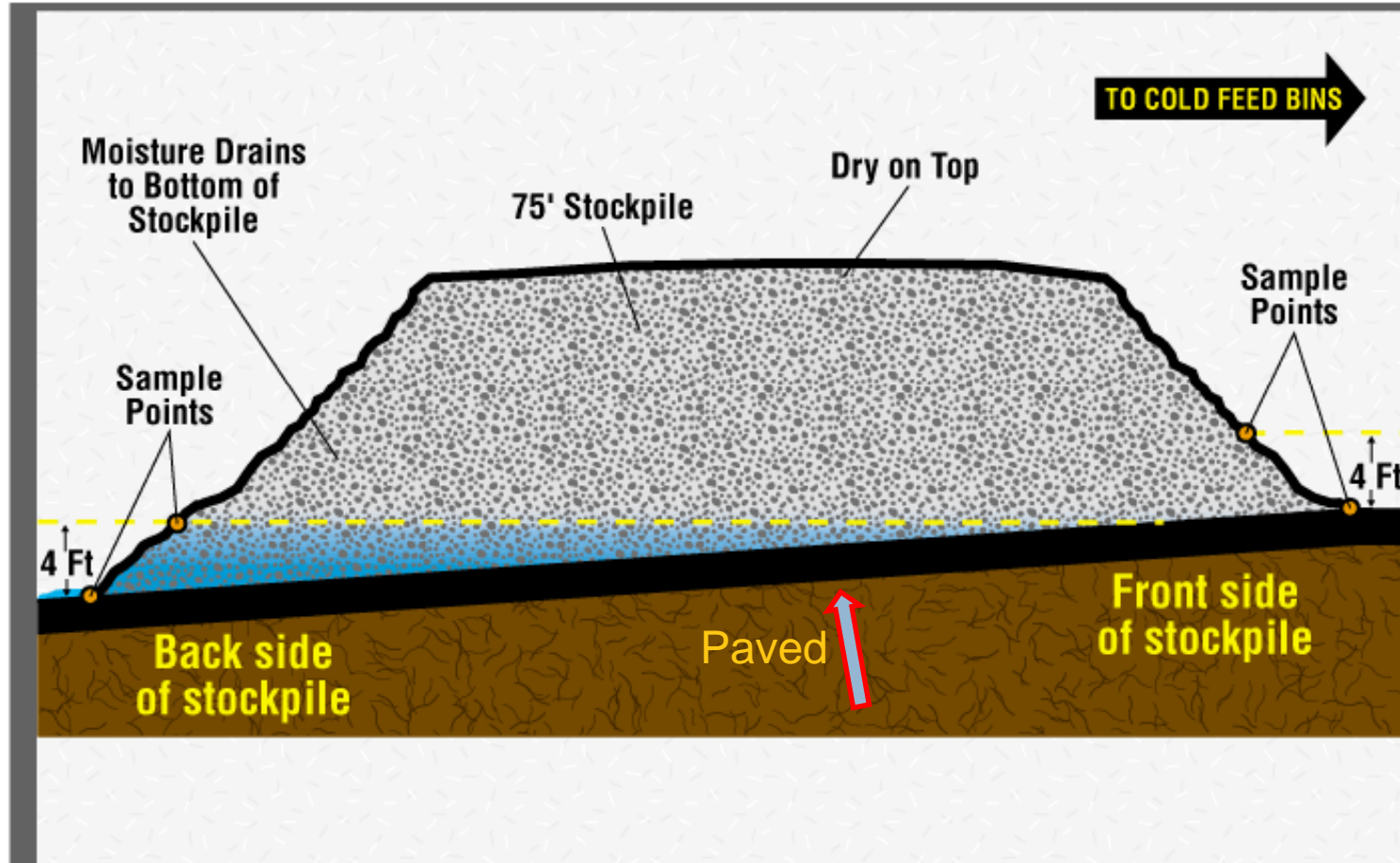
# Covering Cold Feeds & Plant Stock Piling

Weather is never in your control, but usually, you can control moisture with careful site planning & save \$\$



Even covering the bins in rainy climates helps!

# Effective stock pile; Innovation??



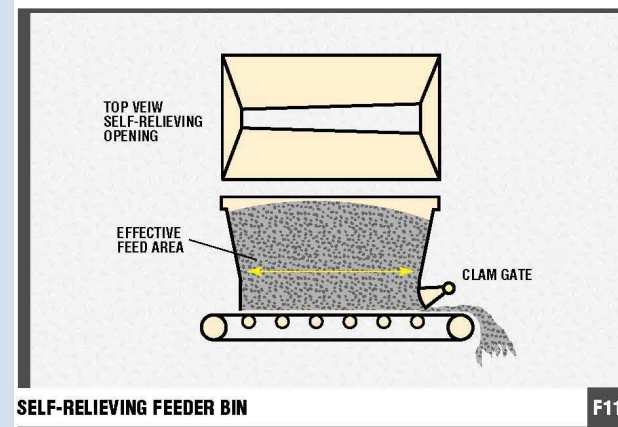
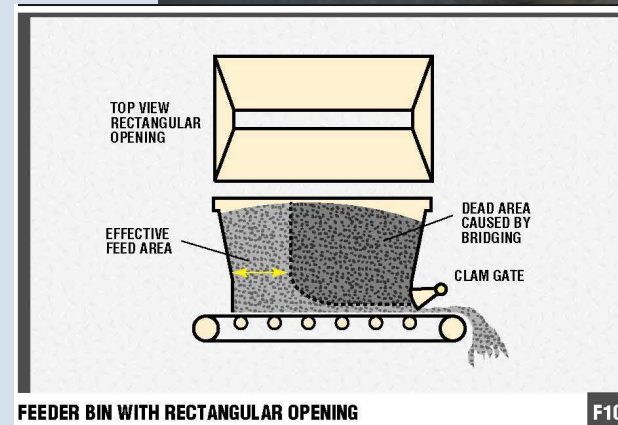
**STOCKPILES WITH IDEAL 4 PERCENT SLOPE**

# Cold Feed Bins: Innovation Effects Quality of Plant Mix

- Moisture Censors
- Non Stick liners
- VFD, increased torque, less energy
- Premium motors
- Self relieving bins (3 to 5% taper)
- Tension maintained
- No Flow switches
- Bin Dividers & extensions reduce segregation
- Troughing idlers
- Walkways on 3 sides at the top



Notice the sliding bottom enclosure for cold climates





# Heat Recovery Bins



- Removes Aggregate Moisture
- Reduces Emissions
- Created water issues



# Conveyor Innovation

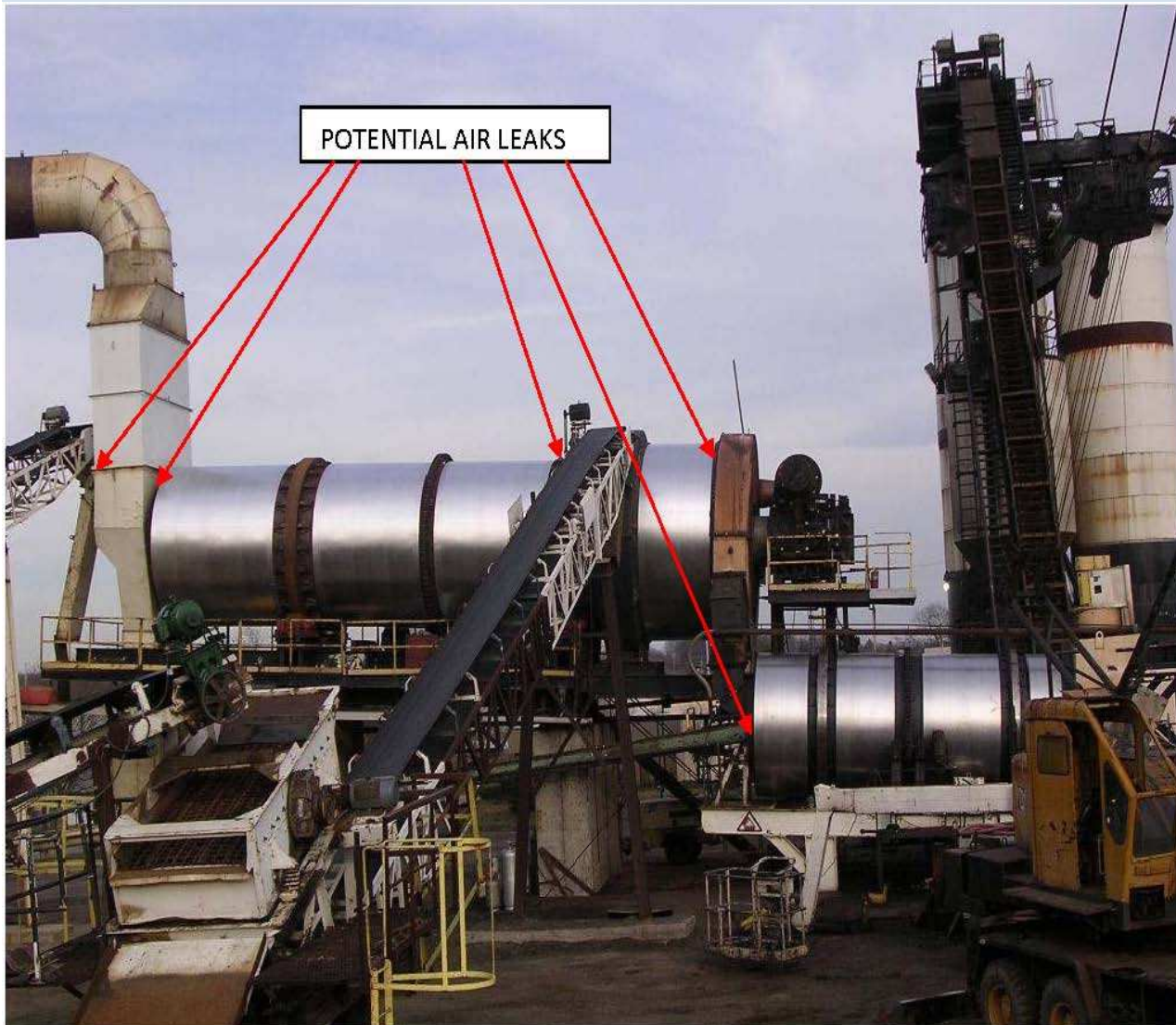


- Covered
- Good belt scrapers
- Tension Maintained
- Direct Drive
- Proper Supports
- Truss framed for stability
- Elevated tail pulleys for ease of cleaning & improved belt life
- Vulcanized belts



Direct Drive & Gravity takeup

# Innovations Drum/Dryer



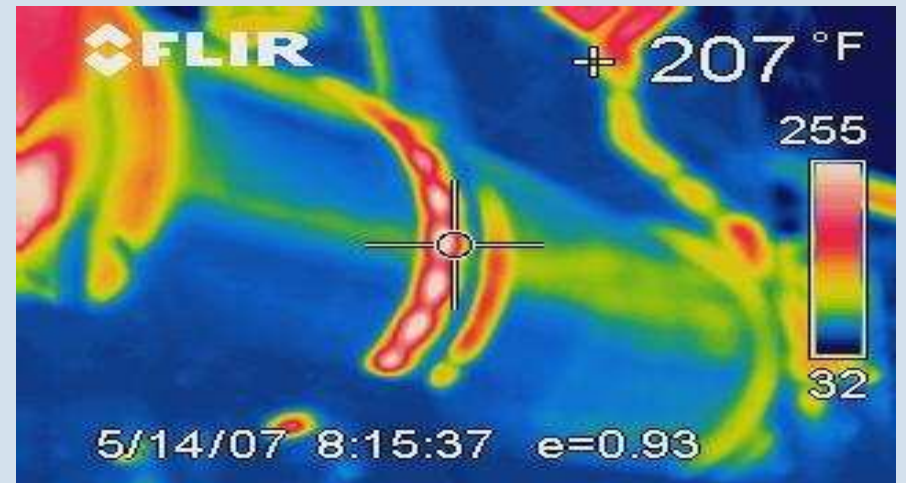
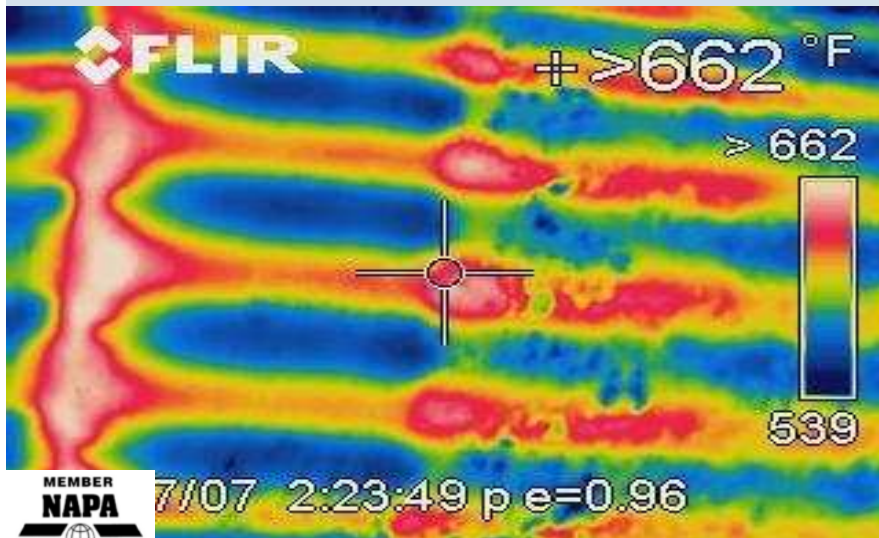
- Insulated
- Higher Temperature Seals
- Dryer & Mixer RPM's
- VFD for RAP & Warm Mix

# Benefits of Dryer/Drum Insulation

Before



After



# Drum Operations

- Due to lower temperatures and addition of RAP, buildup on the flights and in the drum can occur more rapidly



- Frequent starts and stops can be more of a problem with warm mix in cooler temperatures
- Excessive buildup will affect mix quality



**WMA:** Maintaining Bag House Inlet Temperatures are critical & **Indexing slingers** can help especially when RAP is also used



**MEEKER**

# WMA: Maintaining Bag House Inlet Temperatures are critical & Exhaust gas heaters can help



# WMA: Variable Frequency Drive

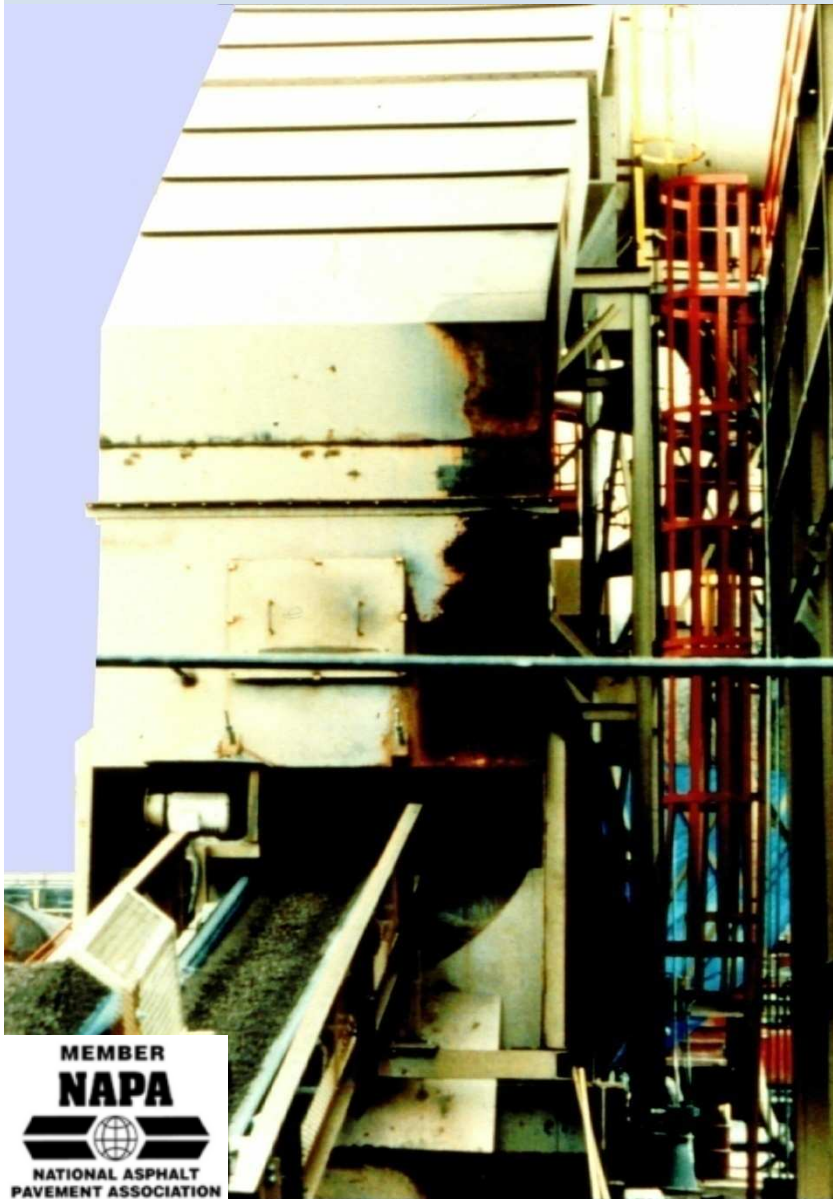
on the drum can also help control inlet bag house Temperature & \$\$





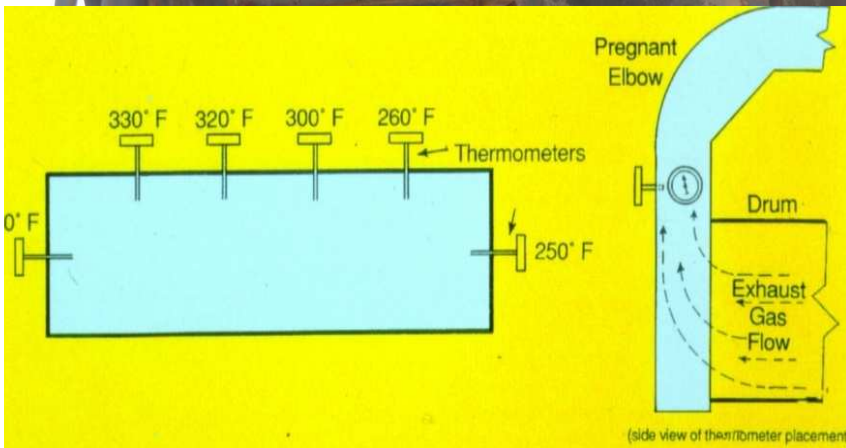
# Innovations in Flighting & Proper Heat Balance is Critical to Quality

- Combustion Flights
- Dryer Flights
- RAP protection vane



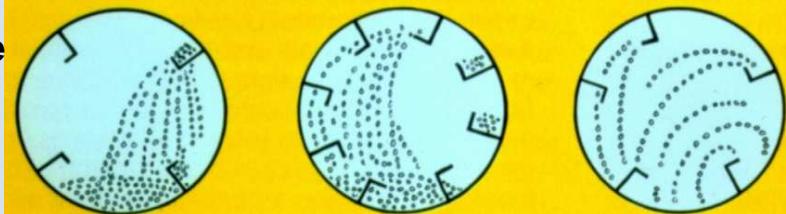
**MEEKER**

# Innovative Methods of determining heat balance NAPA IS-52



Traverse of Thermometers across Breaching or Duct to Check Uniformity of Exhaust Gas Temperature

- Know where the heat goes
- Equal breaching temperature
- No opening in the veil



Insufficient Showering Add Flights

Overshowering Remove Flights

Correct

Effect of Flight Design on Aggregate Veil

# Innovation in Insulation: Non-insulated piping & poorly insulated storage, asphalt tanks & dryer/drum, compound production issues

**Bag Collectors**



**Ducting**

**Primary collectors**

**Batch towers**

**Silo Batchers**



**Blankets**

**Fitted & removable**

**Pumps**

**Man ways**



# Innovations in Asphalt Storage Tanks



- Agitators
- Recirculation Pumps
  - 6" Unloading pumps
- Internal Vent & Overflow
- Removable coils
- Dunnage Beams
- Bitumastic covering
- Non wicking insulation
  - glass at base
- Non contact level systems



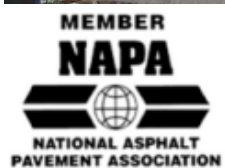
# Innovation in Burner : Optimization Critical to Emissions and Quality of Mix

- **VFD on fuel pumps**
- **Proper fuel viscosity**  
(R.O.C.K.=recycled oil control kit)
- **Fuel Miser** (burn 2 fuels simultaneously)
- **Pressures** monitored as equipment wears
- **Total controlled** combustion systems, simultaneous combustion
- **Lower NOx** requirements are coming; flue gas recirculation, lower Nox burners.



# Proper fuel viscosity for RFO (R.O.C.K.=recycled oil control kit)





Clean RFO is a happy operator

# RFO

- Proper Filtration & Heating
- Viscometer (R.O.C.K.) vs. thermocouple for viscosity control
- Two supply pumps vs. single pump
- Blending #2 oil for ease of operation



# Innovation with Emphasis

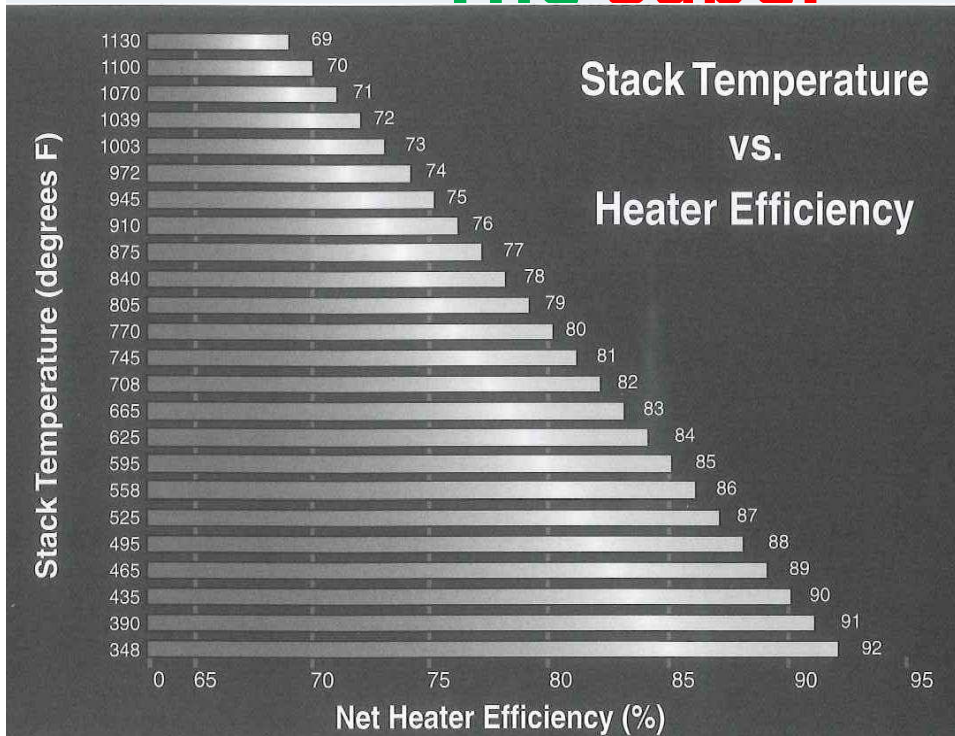
- **Paint Equipment Black**, absorbs energy & looks cleaner
- **Solar on Asphalt** storage & some fuel tanks
- **Remote ticketing**, with video cameras at self service kiosks
- **Automated truck spray** kiosks
- **Ascetics** of facility: improve community favor, employee moral, & buy in at all levels
- **Safety** pays dividends, especially properly lighted for increased night work.
- **Paper work** : record keeping up to date & accurate, both company & regulators
- **Production rates** adjusted slowly for maintaining better accuracy
- **Mix Probe** rotated weekly for accuracy
- **Alternate ingredients** with quality controlled

Porcelain  
RAS  
RAP  
Rubber  
Foundry Sand  
News papers  
Plastics

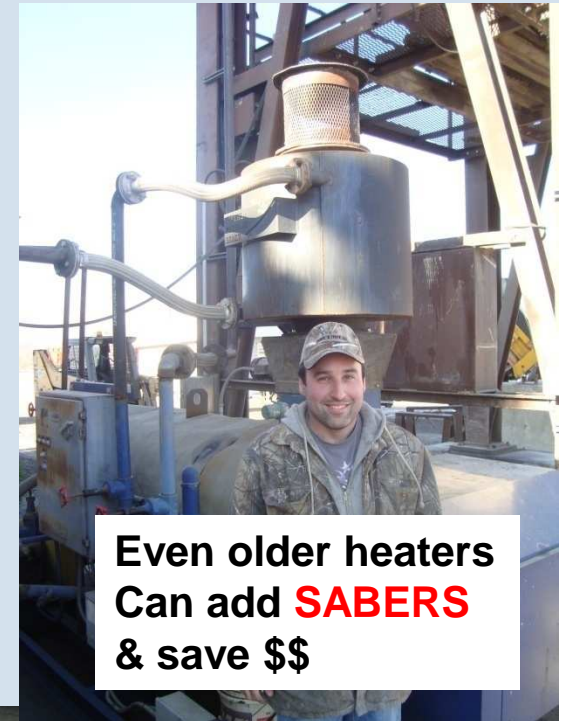




# Innovations with Hot Oil Heater: The Saber



•**Saber**: stack economizers, reduce stack temperature on any heater



Even older heaters  
Can add **SABERS**  
& save \$\$



# Innovations in Asphalt Handling & Heating

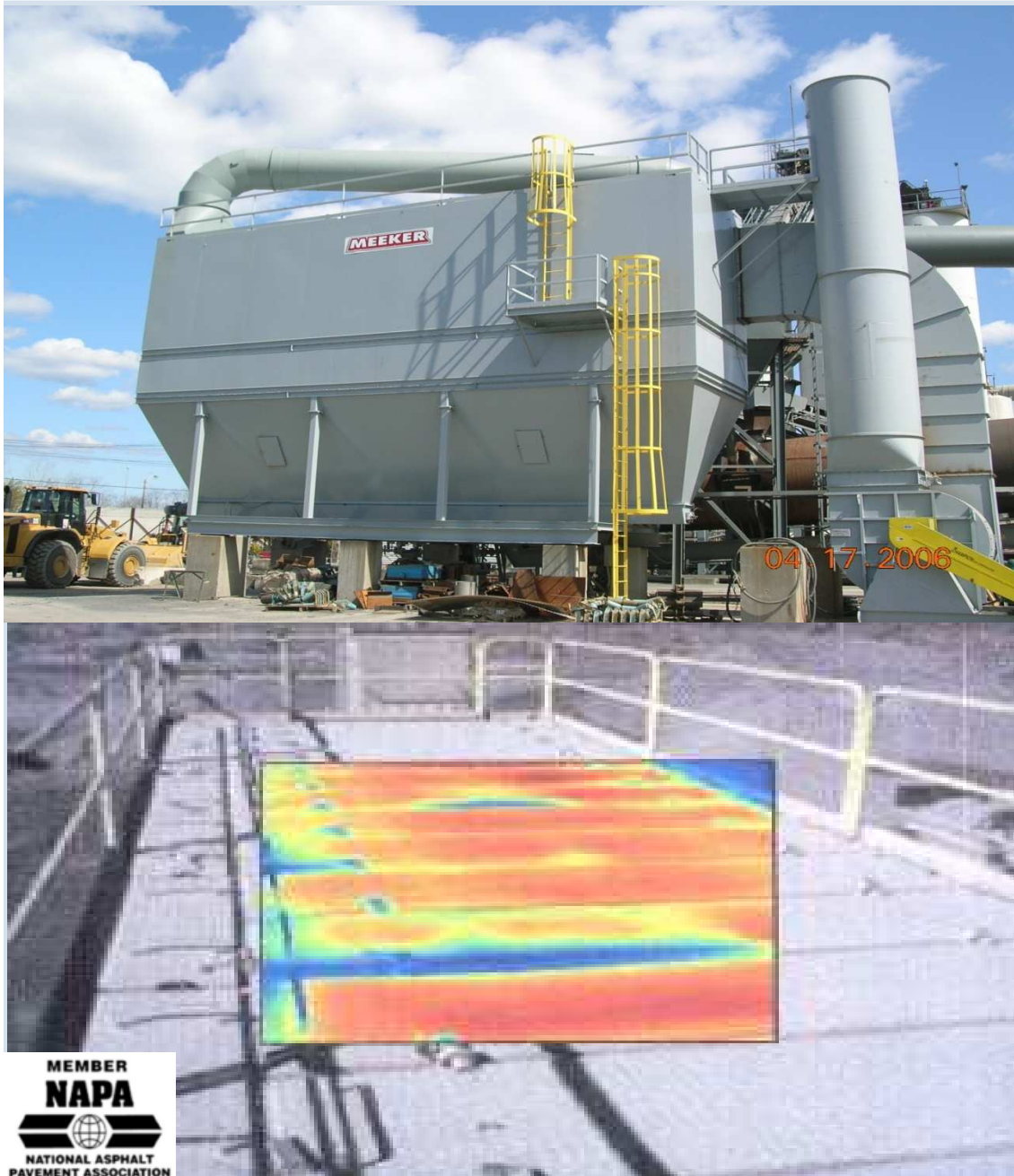
- Larger unloading pumps reduces demurrage
  - Also excellent for recirculation & agitation
- Improved temperatures controls
- Never turn the heat up as it will coke fluid
- Filtering transfer oil can prevent heater failures
  - Coking is a big NO NO
- Bucket & Kettle fill arms
- Better labeling for safety & quality



**Sidestream Oil  
Filter Systems**

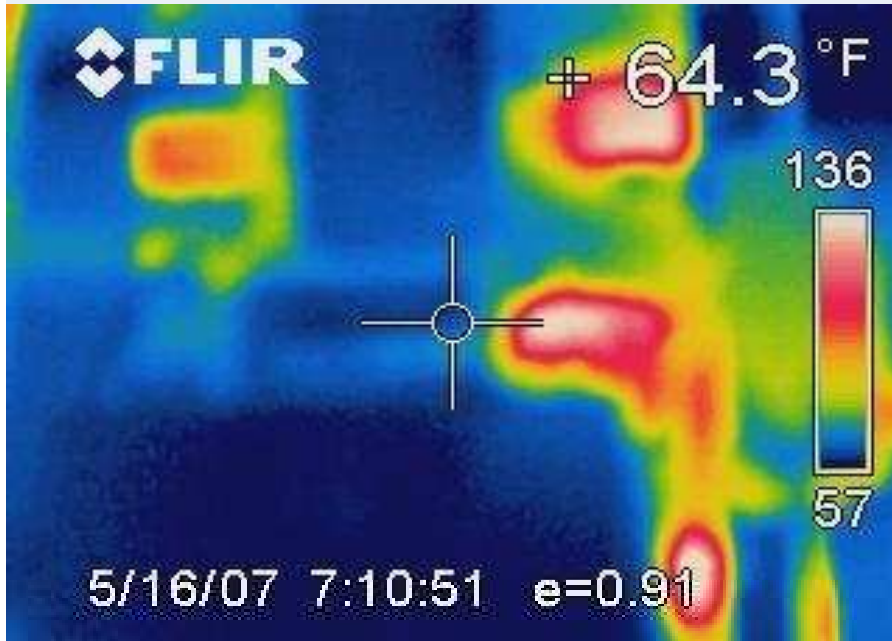


# Innovations in Exhaust Filtering & Handling

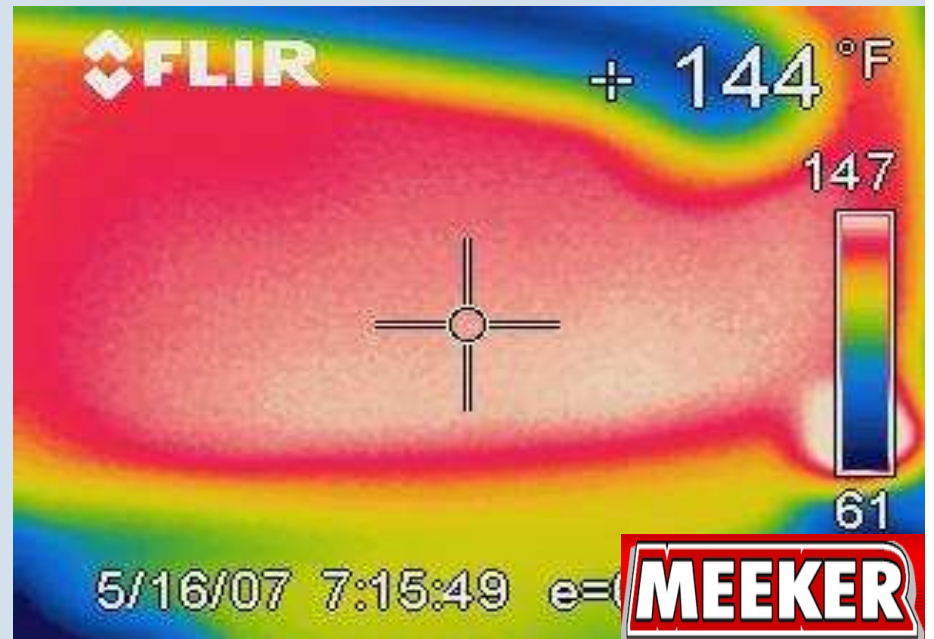


- Pulse Jet vs. Reverse Air design
- Computer controlled Cleaning cycles
- Test & Wash Bags
- Cover top in winter, even entire facility in a building,
- Power Monitoring
- VFD reduces demand charges
- Infrared Cameras for inspection of door seals

# Innovation INFRARED Cameras



- Bearings
- Mix at plant vs. Thermocouple
- Mix on truck
- Hot Aggregates
- Mat temperatures
- Electrical controls
- Bitumen
- Metering pumps

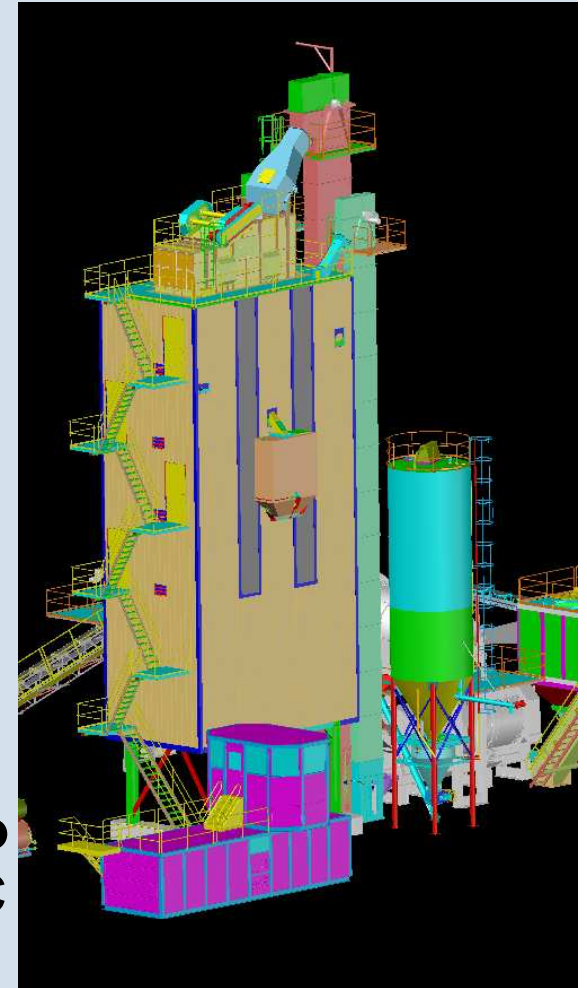


# Innovations in Dust Handling

Weighing out of  
Bag Collector

**DUST PAC-**  
weighing dust  
independently  
back into  
pugmill

Bucket Elevator to  
feed DUST PAC



# Innovations in RAP Handling: RAP PAK



**RAP PAK** -weighing independently  
back into pugmill allows  
greater RAP %

Vapor recovery with VFD fan

Bucket Elevator to feed **RAP PAK**

# Truck Sampling TRex



# Truck Sampling TRex



MEMBER  
**NAPA**  
NATIONAL ASPHALT  
PAVEMENT ASSOCIATION

**MEEKER**



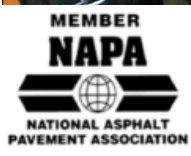
# Truck Sampling TRex



MEMBER  
**NAPA**  
NATIONAL ASPHALT  
PAVEMENT ASSOCIATION

**MEEKER**

# Truck Sampling TRex



# Truck Sampling TRex



MEMBER  
**NAPA**  
NATIONAL ASPHALT  
PAVEMENT ASSOCIATION

**MEEKER**

# Truck Sampling TRex



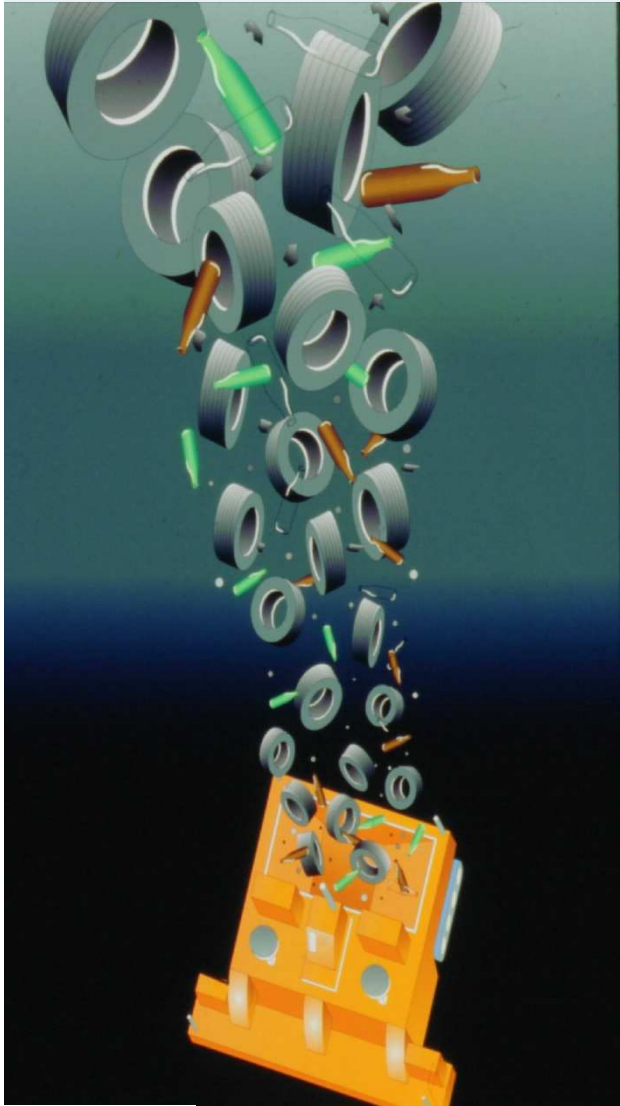
• **SCHEDULING**

• **TRANSPORTATION**

• **I.T. HOURLY IMPROVMENT**



# WHY ASPHALT IS BETTER



- Most **recycled** product in the world
- Smoothest & long lasting
- Immediate traffic even for our Hero's



What will go into our mixes next? We already have the kitchen sink

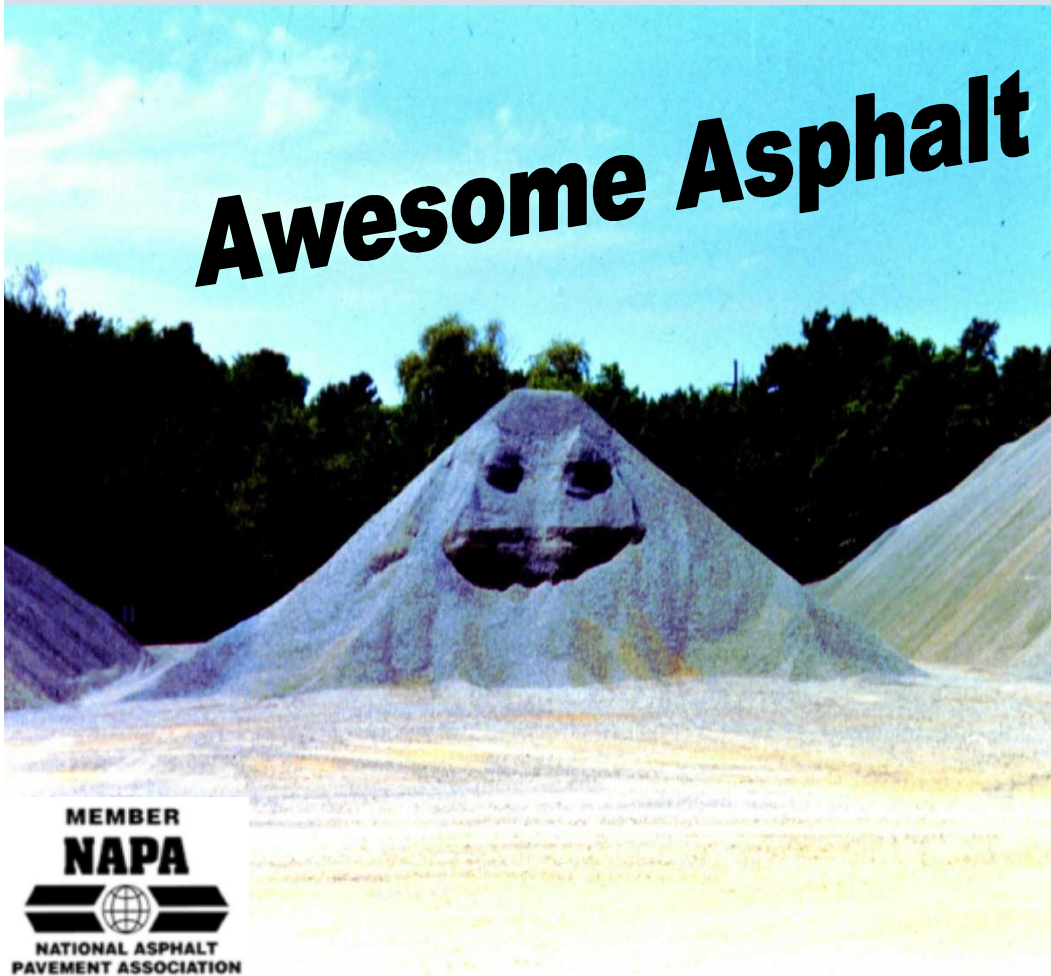


# ?? Questions ??

**“THANK -YOU”**

**2012 NCAUPG Technical Conference 2/15/12**

**Awesome Asphalt**



**Bill Garrett – Partner**

**Meeker Equipment, Inc.**

**5602 SR 655**

**Belleville, PA 17004**

**Mobile # 267 446 4796**

**Office # 717 667 6000 ext 6**

**[Bill@meekerequipment.com](mailto:Bill@meekerequipment.com)**

