Materials 207: Troubleshooting Production Problems

A Contractor’s Perspective
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Troubleshooting Asphalt Problems
Troubleshooting Asphalt Problems

THE CONTRACTOR’S PERSPECTIVE
The best way to troubleshoot asphalt problems is to keep them from happening.
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Troubleshooting Asphalt Problems

THE CONTRACTOR’S PERSPECTIVE
The best way to troubleshoot asphalt problems is to keep them from happening.

Eliminating problems before they happen is more economical, maintains a better relationship with the customer and provides a better, more long lasting product.
Common Asphalt Problems
Common Asphalt Problems

- Crushing Problems
  - Segregation
  - Fluctuation in gradation
Common Asphalt Problems

- **Crushing Problems**
  - Segregation
  - Fluctuation in gradation

- **Asphalt Plant Problems**
  - Fluctuating Gradation
  - Segregation
  - Fluctuating Binder Content
Common Asphalt Problems
Common Asphalt Problems

Transportation Problems
  • Segregation
  • Mix temperature fluctuation
Common Asphalt Problems

- **Transportation Problems**
  - Segregation
  - Mix temperature fluctuation

- **Paver Problems**
  - Segregation
  - Smoothness
  - Bad Joints
Common Asphalt Problems
Common Asphalt Problems

Density and Smoothness Problems

- **Density**
  - Inconsistent or low density caused by thermal or material segregation
  - Density problems related to improper rolling practices

- **Smoothness**
  - Temperature segregation can contribute to a smoothness problem
  - Poor rolling practices will affect smoothness
Troubleshooting Asphalt

Public Works Policy of Jamaica
Troubleshooting Asphalt

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No “Problems” only “Situations”
Troubleshooting Asphalt

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Public Works Policy of Jamaica

No “Problems” only “Situations”

There definitely were some situations with the road conditions in Jamaica
Troubleshooting Asphalt “Situations”
APPLETON ESTATE

RUM TOUR

SAFETY BEGINS HERE

01/26/2011
A system of good practices and cooperation throughout the entire paving process from aggregate crushing through asphalt production to the asphalt placement will minimize or eliminate “asphalt problems.”
Aggregate Production
Aggregate Production

Crusher Control

- Proper Screen Settings
- Frequent checking of screens while crushing
- Maintain both quality of product and rate of production
Aggregate Production
Aggregate Production

- RAP Production
  - Good crushing practices are essential
Aggregate Production

- RAP Production
  - Good crushing practices are essential

- Stockpile Management
  - Build stockpiles in layers
Aggregate Production

- RAP Production
  - Good crushing practices are essential

- Stockpile Management
  - Build stockpiles in layers
  - Avoid comingling and contamination
Asphalt Plant Operations

- Aggregates
  - Proper stockpile management
  - Keep bins from running out or running over
  - Avoid comingling of materials
Asphalt Plant Operations

- Aggregates
  - Proper stockpile management
  - Keep bins from running out or running over
  - Avoid comingling of materials

- Careful calibration of plant
Asphalt Plant Operations
Asphalt Plant Operations

- Asphalt cement (binder)
  - Regular calibration of asphalt pump
  - Maintenance of pumps and hot oil heating system
Asphalt Plant Operations

- Asphalt cement (binder)
  - Regular calibration of asphalt pump
  - Maintenance of pumps and hot oil heating system

- Baghouse fines
  - Collection and metering of baghouse fines
  - Regular maintenance and repair of baghouse and fines delivery system
Asphalt Plant Operations
Asphalt Plant Operations

Silo Management

- Maintain proper level of material in silo
  - Avoid loading trucks without enough mix in silo
- Regular maintenance of bin-top conveyors, gob hoppers and silo gates
Asphalt Plant Operations

- **Silo Management**
  - Maintain proper level of material in silo
    - Avoid loading trucks without enough mix in silo
  - Regular maintenance of bin-top conveyors, gob hoppers and silo gates

- **Truck Loadout**
  - Make sure truck beds have been cleaned out
  - Practice multiple dump loading
Asphalt Paving Practices

- Match plant, paver and roller speed
  - Avoid temperature segregation
  - Avoid smoothness issues caused by starting and stopping
Asphalt Paving Practices

- Match plant, paver and roller speed
  - Avoid temperature segregation
  - Avoid smoothness issues caused by starting and stopping

- Pickup machine
  - Proper size of windrow to match paver demand
Asphalt Paving Practices

- Match plant, paver and roller speed
  - Avoid temperature segregation
  - Avoid smoothness issues caused by starting and stopping
- Pickup machine
  - Proper size of windrow to match paver demand
- End dump into paver hopper
Asphalt Laydown
Asphalt Laydown

- Maintain proper amount of material in the hopper
Asphalt Laydown

- Maintain proper amount of material in the hopper
- Match paving speed to the rate of asphalt delivery
Asphalt Laydown

- Maintain proper amount of material in the hopper
- Match paving speed to the rate of asphalt delivery
- Constant head of material at the augers
Asphalt Laydown

- Maintain proper amount of material in the hopper
- Match paving speed to the rate of asphalt delivery
- Constant head of material at the augers
- Augers moving almost constantly
Asphalt Laydown
Asphalt Laydown

- Proper angle of attack at the screed
Asphalt Laydown

- Proper angle of attack at the screed
- Proper use of skis and joint matchers
Asphalt Laydown

- Proper angle of attack at the screed
- Proper use of skis and joint matchers
- Rely on the screed automatics
Asphalt Compaction
Asphalt Compaction

- Match type, size and number of rollers to the project.
  - Too large of rollers can be as detrimental to the project as rollers that are too small
  - Pneumatic rollers can be beneficial to compaction (they are usually required)
  - Some projects may require multiple rollers
Asphalt Compaction
Asphalt Compaction

➢ Use the compaction test section to the benefit of everyone
  • Establish and maintain a good rolling pattern
  • Determine best compaction temperature for rolling
  • Identify and avoid the “tender zone”
Troubleshooting Asphalt Problems
Some asphalt problems are not a problem with the asphalt at all.
Troubleshooting Asphalt Problems

- Some asphalt problems are not a problem with the asphalt at all.
- Asphalt problems that are a problem with the asphalt are a breakdown of “Best Practices” in one or more areas of asphalt production and placement.
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Asphalt problems that are a problem with the asphalt are a breakdown of “Best Practices” in one or more areas of asphalt production and placement.

All asphalt problems can be solved through cooperation by all the involved parties.
Troubleshooting Asphalt Problems
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QUESTIONS??