



Ride Quality: Steps to Make it Smooth

Virginia 2022 Regional Asphalt Seminar

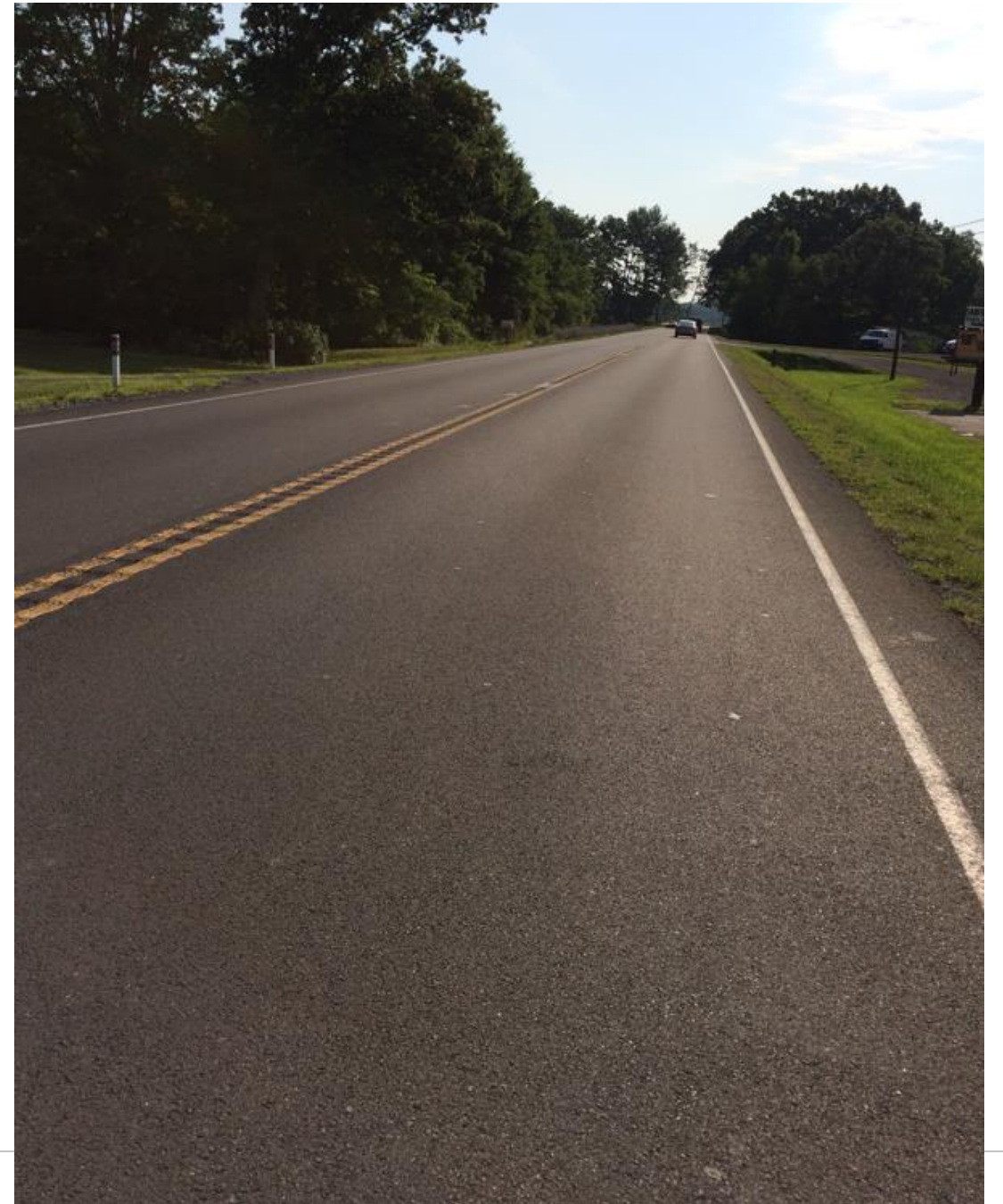
Bryan Smith, VDOT - Northern Field Engineer

James DeVerna, Superior Paving - Senior Operations Manager

Importance of Ride Quality -

Ride quality is a substantial part of paving quality

Public notices 2 aspects of paving: aesthetics and smoothness.



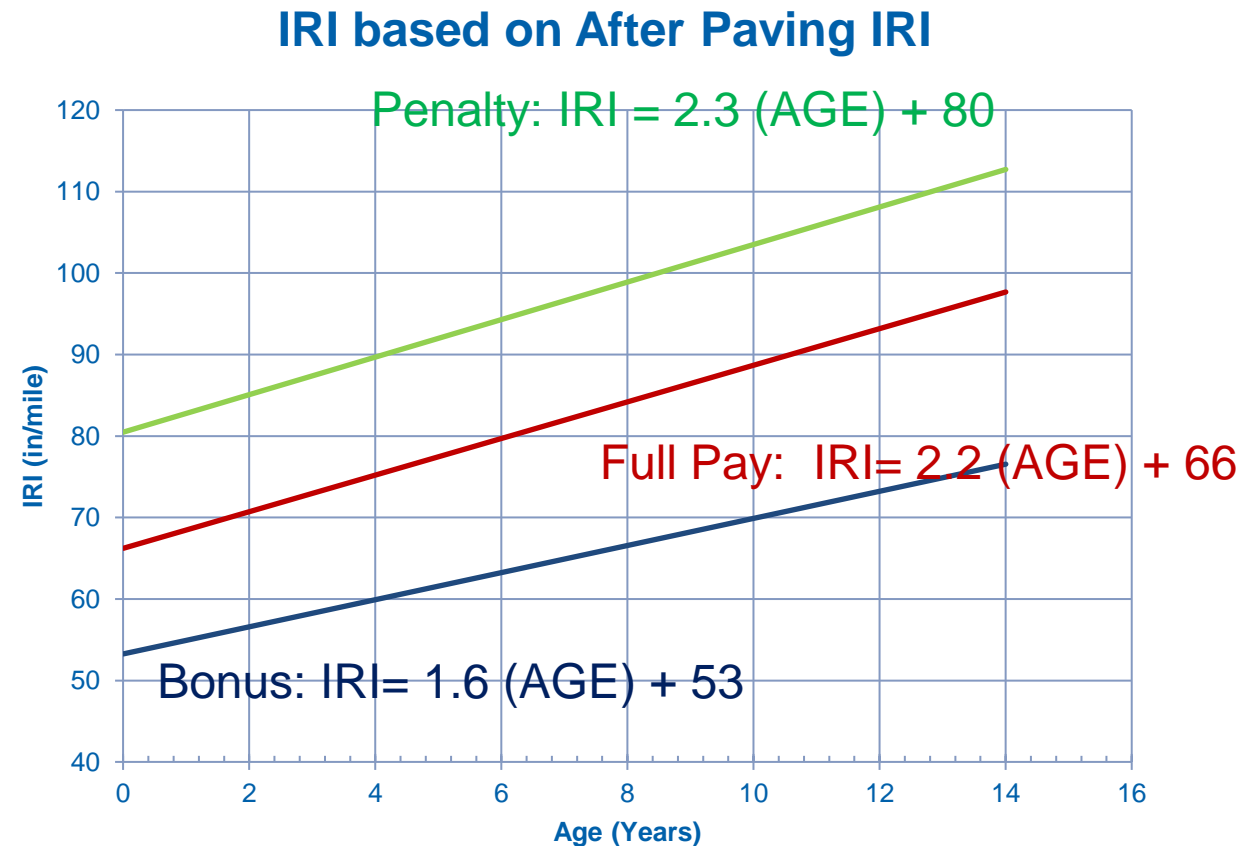
Smooth Pavements Last Longer

Pavements built smooth stay smoother longer

Smooth paving may have slower increase in roughness

Smooth pavements expected to last 2 years longer

(VTRC 06-R28)



Measuring Smoothness

International Roughness Index (IRI)

- Roughness felt in driving at highway speed
- Laser measure of longitudinal profile (<3")
- Continuous testing at speed -
- Reported in inches per mile (in/mi)

High-speed IRI measurement is only suitable for select routes, however **smoothness is important for all paving.**



VDOT Ride Spec Requirements

Pay Factor	Interstate	Non-Interstate	Incentive Only
115%	<45	<55	<60
110%	55	65	70
100%	70	80	85
90%	80	90	95
80%	90	100	105
70%	100	110	115
Corrective Action	>100	>110	N/A

- Measure 0.01 mile intervals
- Existing IRI measured before paving for Single-lift
- **Single-lift penalty waived w/ >30% improvement on 0.1 mile**
- Lowest IRI from 2 After runs
- Testing completed within 30 days after request

2021 Statewide Ride Results Summary

Total Lane-Miles:	1,110
Median After IRI	61 in/mi
Median Percent Improvement:	33 %
Median Pay Adjustment:	5.2 %
Total Incentive:	\$3 Million

ACHIEVING SMOOTHNESS - CONSISTENCY



Consistency is key – Steady Paving Process



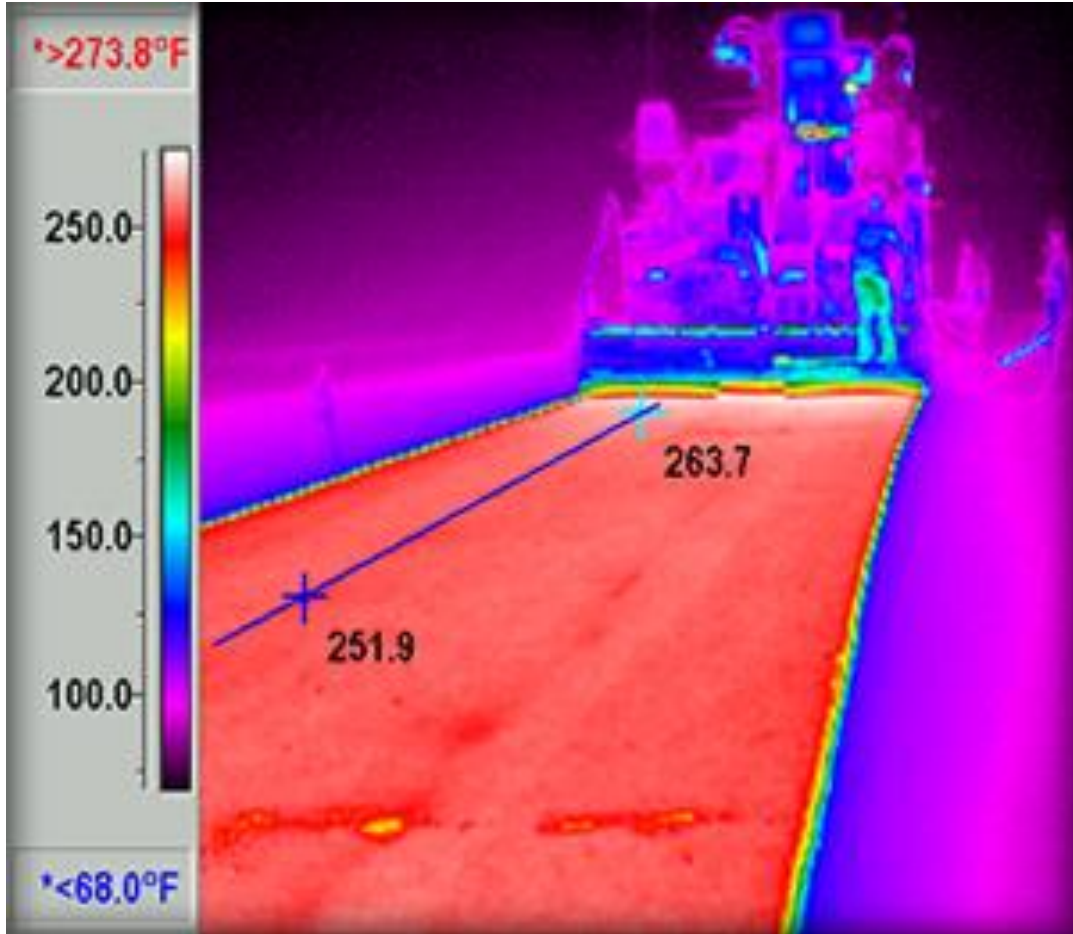
Steady, continuous paving process with consistent speed.

Consistency is key – Constant Material Head



Augers continually turn slowly – keep uniform head throughout.

Consistency is key – Uniform mix



Mix at right temperature and uniform mat texture

Consistency is key – Best Roller Practices



Turn at an angle. Can leave indents from vibratory if rolling too fast.

Straight lines for Paver

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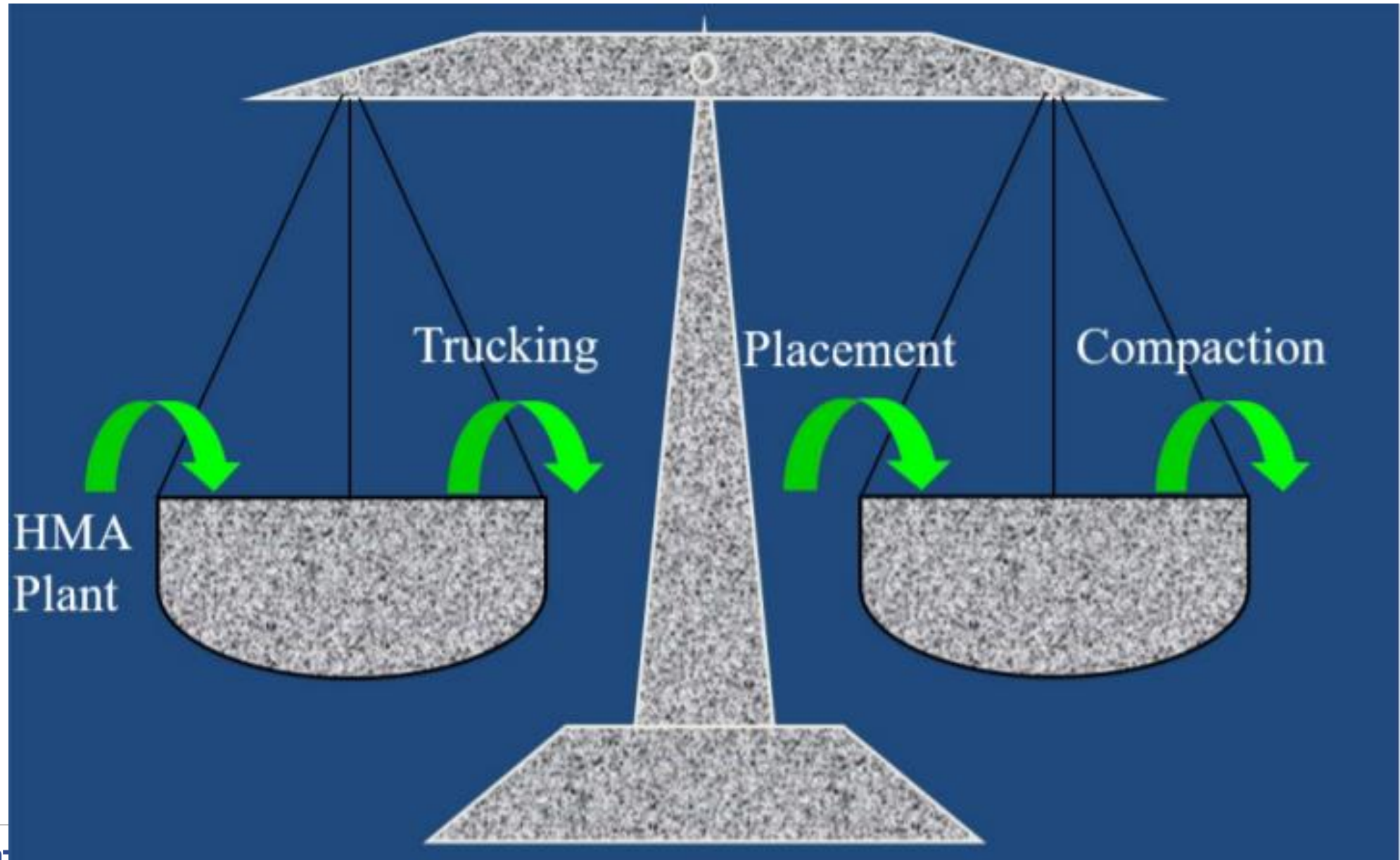
Clean Surface





**Avoid leaving mix
in front of paver!**

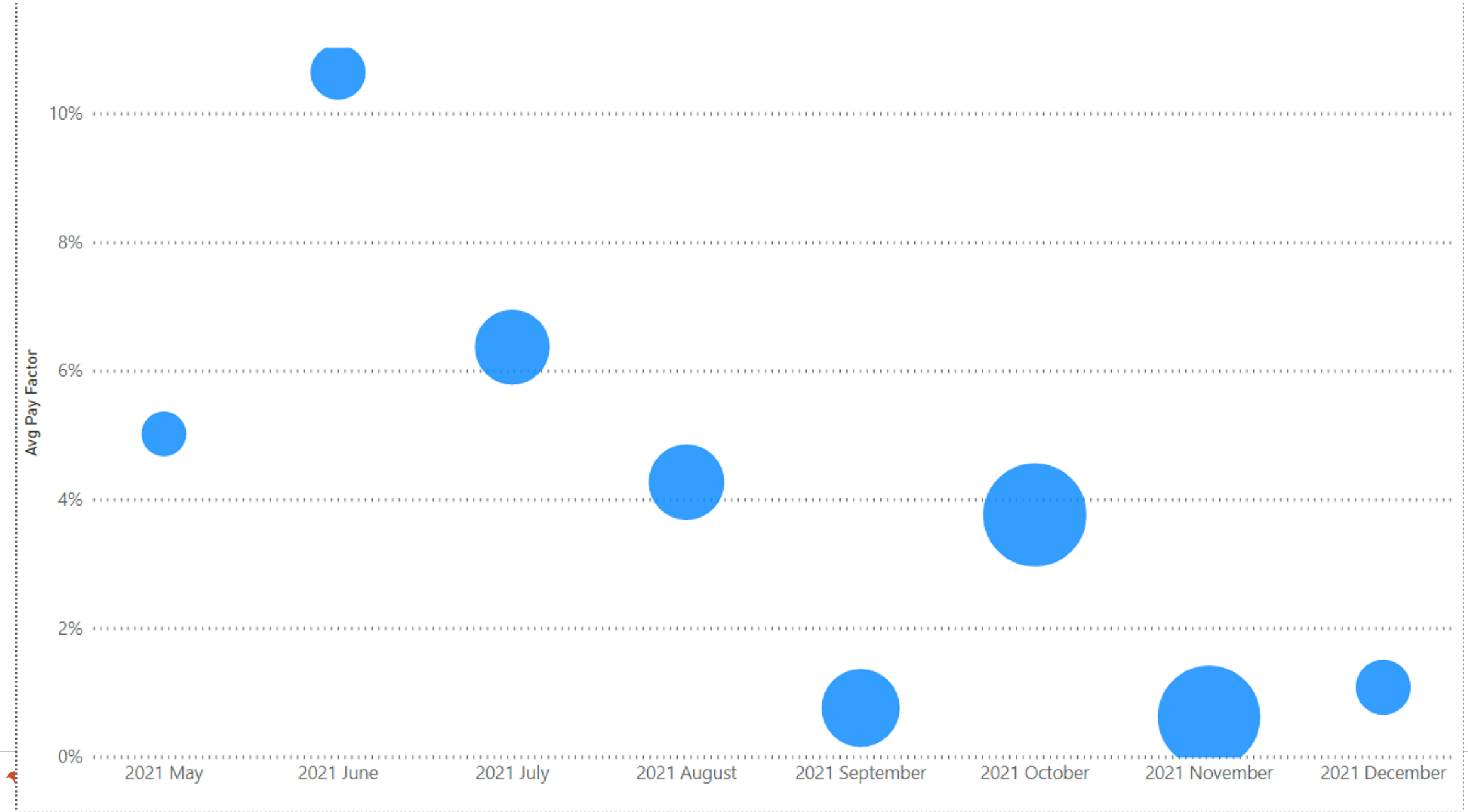
Balance Production – match production rate for all aspects



SMOOTHNESS OBSTACLES



Timing of Paving – 2021 Avg Ride Pay Factor by Month



Connections, Turn Lanes, Entrances, and Driveways

**Best practice to pave
mainline continuous.**

**Plan out paving to need as
little paver adjustments
as possible**



Rough and Uneven Existing Surfaces



- **Milling can help correct existing roughness**
- **Pre-overlay patching level with existing pavement.**
- **High % improvements are still possible!**
 - **Up to 65% in 2021**

Communication

Review routes and discuss concerns about rideability on a route prior to paving

Plan for trouble spots that may need extra attention for smoothness

Address any issues during paving ahead of rideability testing.

Achievement of a Smooth Ride

'Contractor Perspective'



Planning

- Establish a “quality driven” plan to optimize the ride smoothness
 - Weather considerations
 - Communicate with inspector or contractor
 - Internal plan:
 - Truck count
 - Pathway to the job
 - Plant activity



Equipment Set Up

- Equipment condition
- Transfer machine
- Automation/ joint matcher
- Proper roller set up
- Screed adjustment

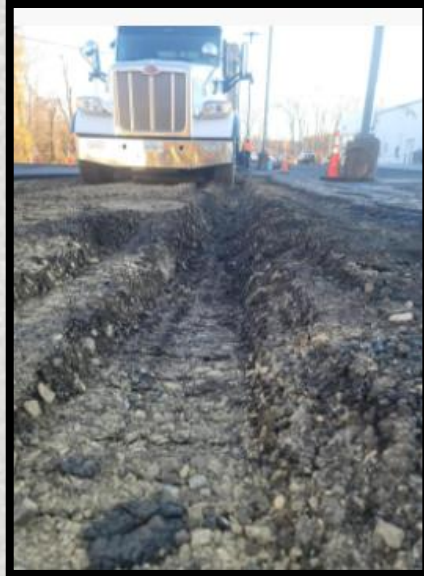


**SUPERIOR
PAVING CORP.**

**ETY
FE**

Underlying Surface

“Only as good as what is underneath”



Milling Operation

- Milling Speed
 - 50 to 70 ft/min
- Teeth Condition
- Automation

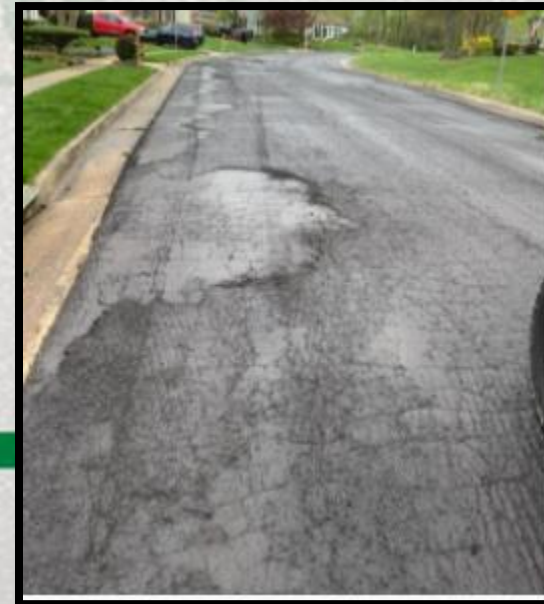


**SUPERIOR
PAVING CORP.**

**SAFETY
IS FOR LIFE**

Problems in Milled Surface

- Scabbing
 - Adjusting depth
 - Option to scratch
- Fatigue/ Pumping
 - Patch
 - Deep mill (if widespread)



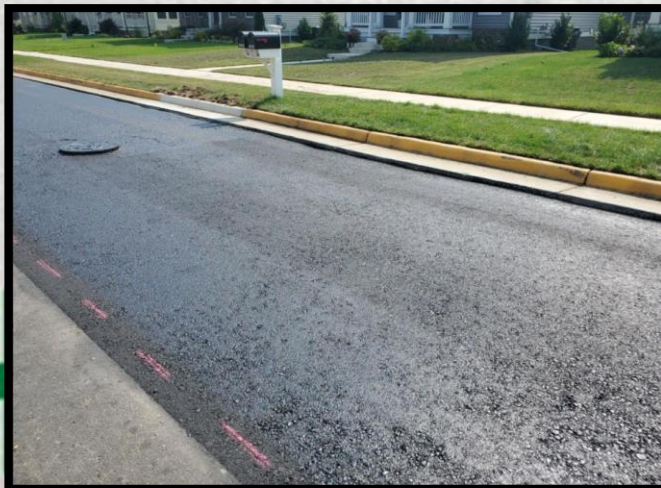
**SUPERIOR
PAVING CORP.**

**ETY
IFE**

Before Paving...



- Thorough job layout
 - Striping plan
 - Contract changes
- Job cleanliness
- Uniform tack
 - *Allow time to break



Best Practices While Paving

- Consistent paver speed
 - *30 ft/min or less
- Asphalt mat uniformity
- Roller turnout and proper roller pattern



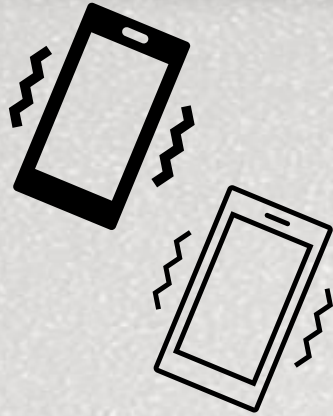
**SUPERIOR
PAVING CORP.**

**SAFETY
IS FOR
LIFE**

- Use of straightedge on transverse joints
- Consistent head of material
- Properly 'matching' fixed object elevations



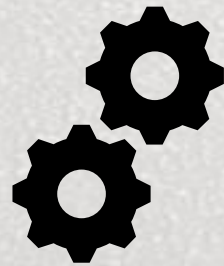
And most importantly...



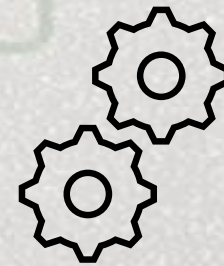
Effective communication
within the team!



- Ride the job at the end of the day!
 - If something is wrong, the best opportunity to fix it is when the paving crew is still mobilized



Thank you!



Review of Steps for Smooth Paving

- ❑ **Planning - layout job for continuous operation**
- ❑ **Communicate – identify problem areas and issues**
- ❑ **Have good equipment - MTV and paver automations**
- ❑ **Prepare existing surface - less correction needed from overlay**
- ❑ **Steady pace – too fast milling, paving, or rolling can be a problem**
- ❑ **Match production rates at plant, trucking, paver, and compaction**
- ❑ **Consistency!**