

$$Q^2 = 3M$$

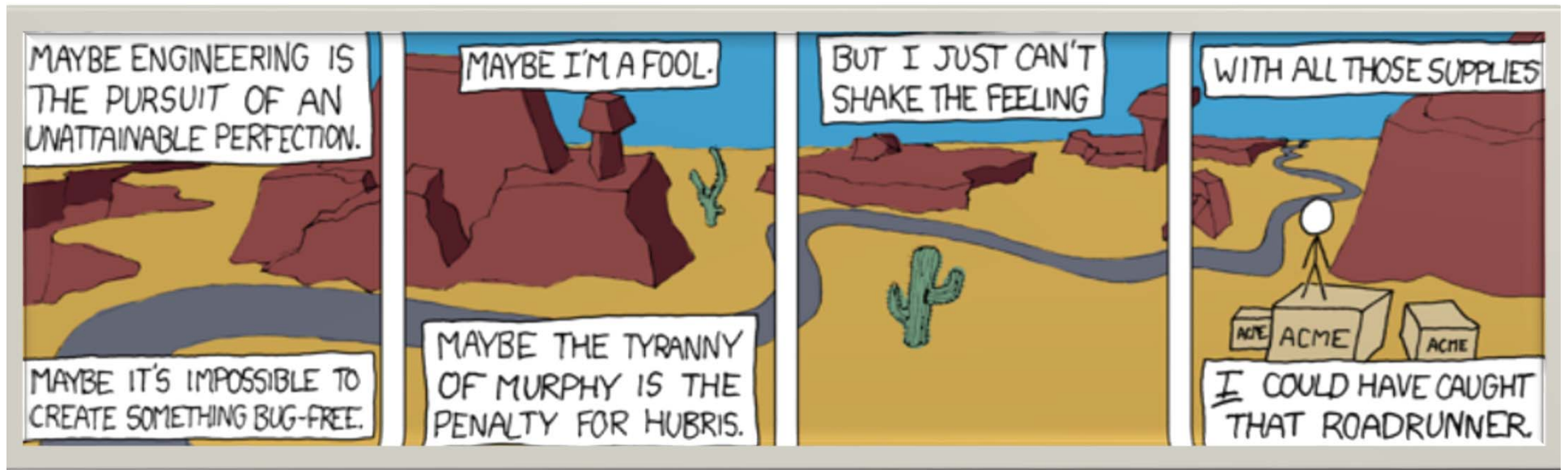


Quality * Quantity =
Materials
+ Machinery
+ Methods

Transportation Research Board's Report 202 (1984)



TRB declared that "asphalt, more than any other single product, sustains the nation's highway system and facilitates the flow of commerce."



Timothy R. Murphy, P.E.
President

Murphy Pavement Technology
www.murphypavetech.com

Heavy Vehicle Simulator (HVS)

- Evaluating four tire types and effect on rutting for dense and open graded mixtures.

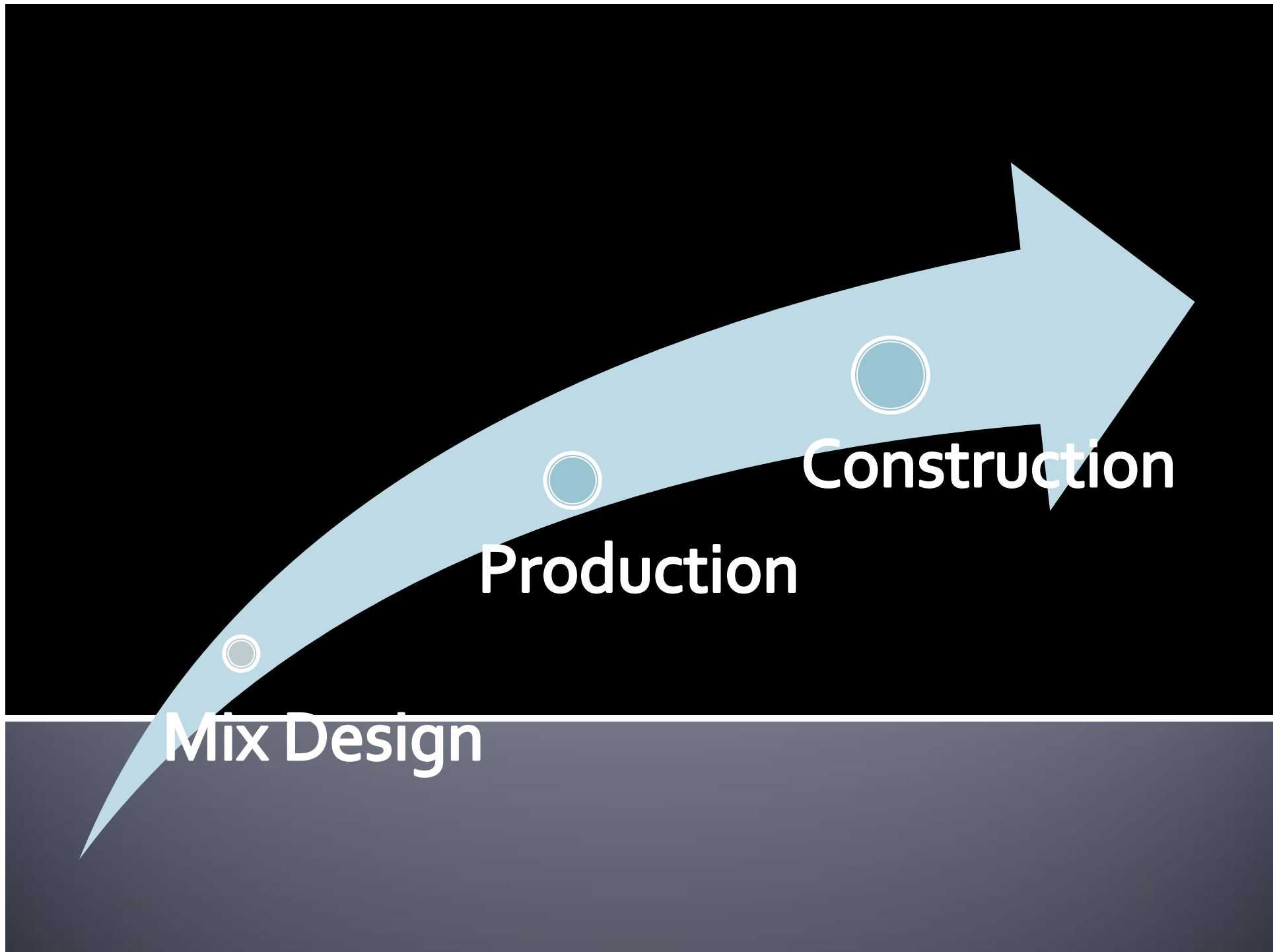


- Duals - Goodyear G149 RSA Unisteel 11 R22.5
- Super single - Goodyear G 286A 425/65 R22.5
- Wide base - Michelin X one XDA-HT Plus 445/50R22.5
- Wide base - Michelin X one XDA-HT Plus 455/50R22.5

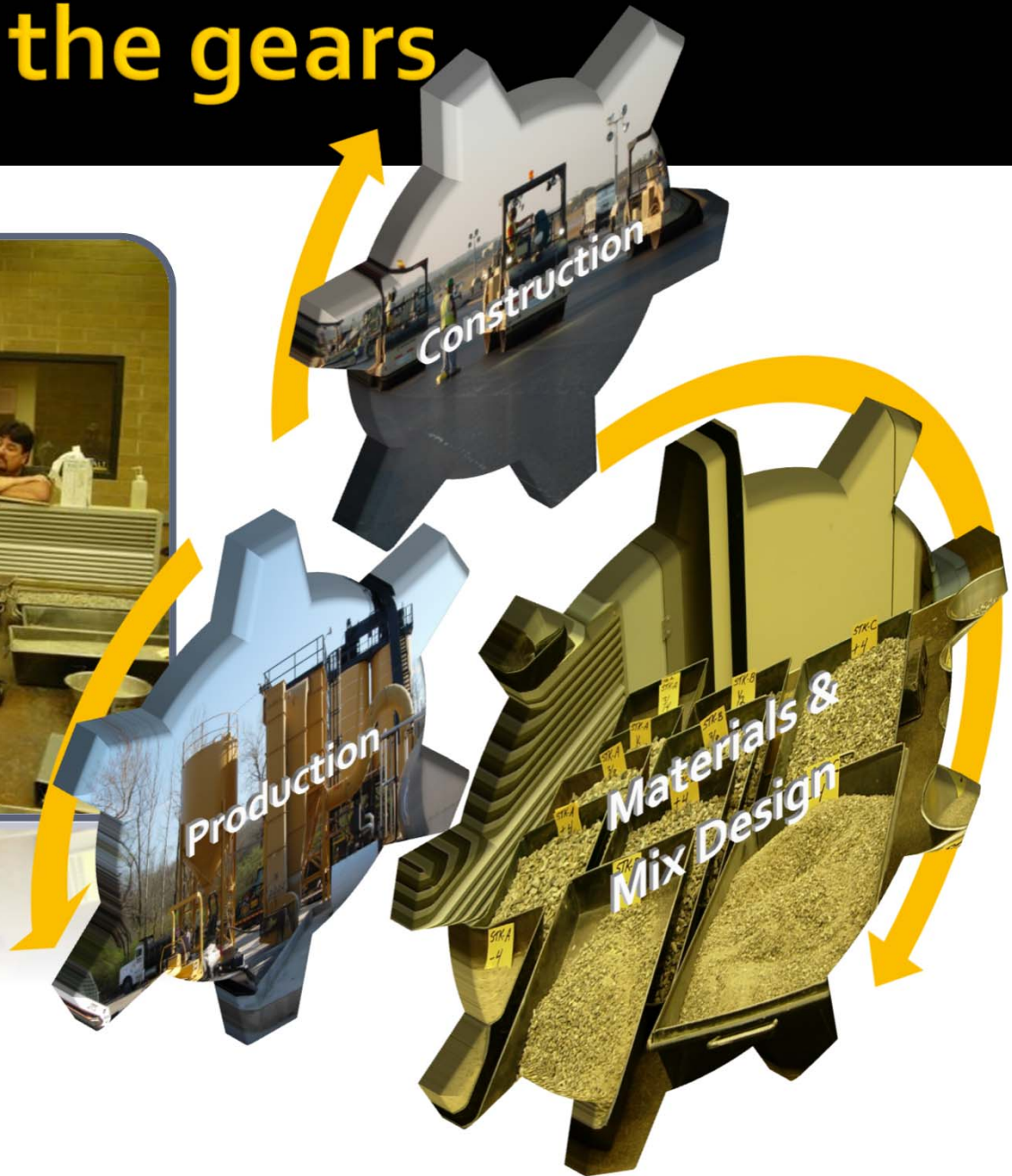
HVS ranking of rut depths

- Super single > Wide base > Duals
- Same trend for both mix types.





People turn the gears



Agency & Contractor People

BUILDING BLOCKS AND MORTAR

Ethics

Trust

Teamwork

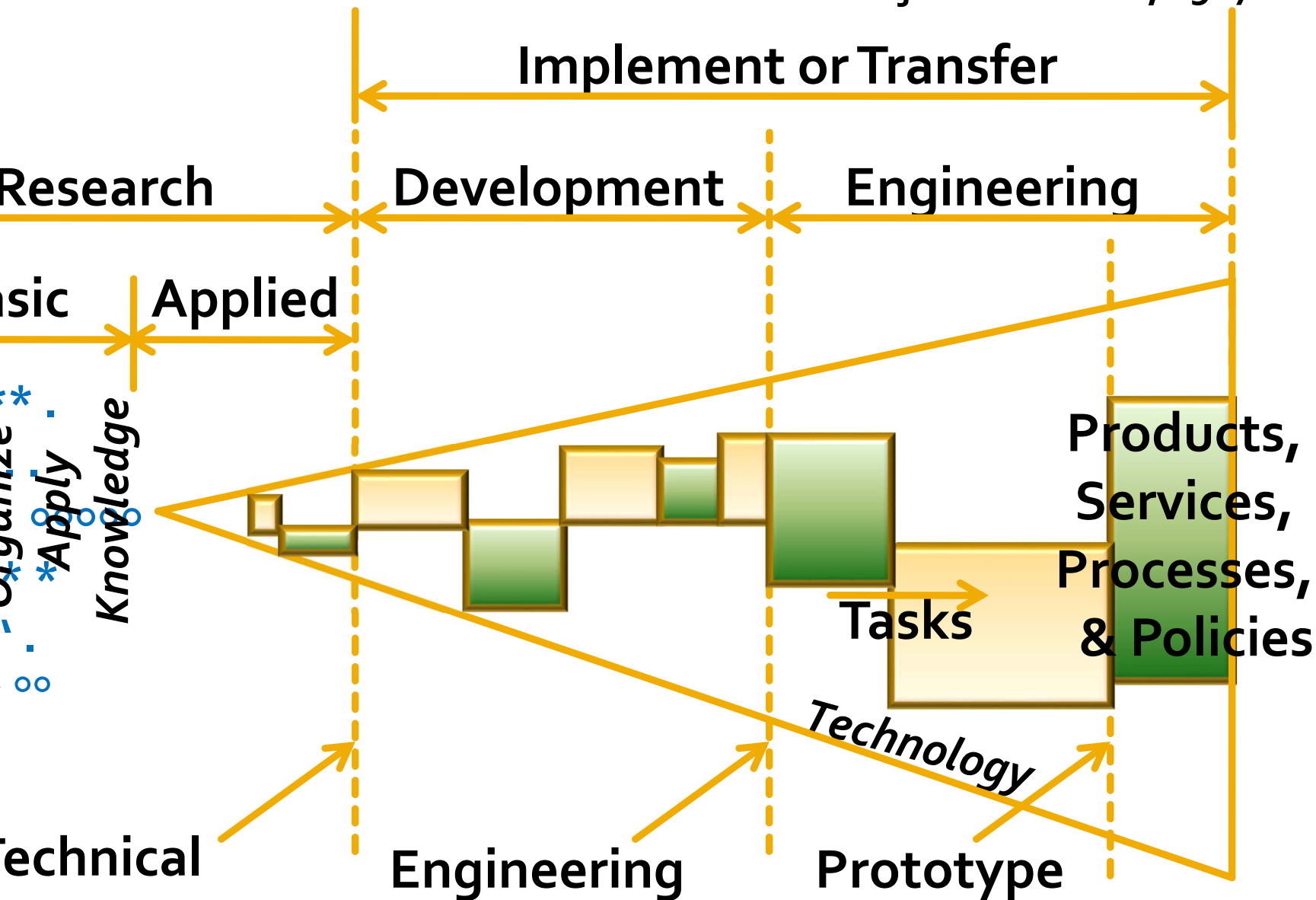
Recognition

- Integrity
- Training
- Leadership
- Communication

IRREFUTABLE

MODEL OF DEVELOPMENT OF TECHNOLOGY

- Oujian and Carne, 1987



DOT Technology *Fast Forward*

Field VMA.
Longitudinal Joint Density.
Pay for Performance (PFP).

Three axioms of truth between stake holders

Utilization is inversely proportional to the distance between researchers and users of research.

[Develop close working relationships.]

Utilization is inversely proportional to the degree of formality in the communication between the researcher and the user.

[Highly task oriented individuals need to remember that informal communication with little formal documentation works.]

Three axioms of truth between stake holders

Utilization of research increases with the degree of understanding that the researcher and the user have of each other's problems and motivations.

[Ensure hands-on efforts at multiple levels of decision making.]

DOT Technology *Fast Forward*

Field VMA.

Longitudinal Joint Density.
Pay for Performance (PFP).

Include 'Breakdown'
in every design

Dust; All In or None In

PRACTICAL SOLUTION

Design is starting point,
High dust to asphalt
leads to 'new designs',
Baghouse and silo are
the umbilical for HMA.



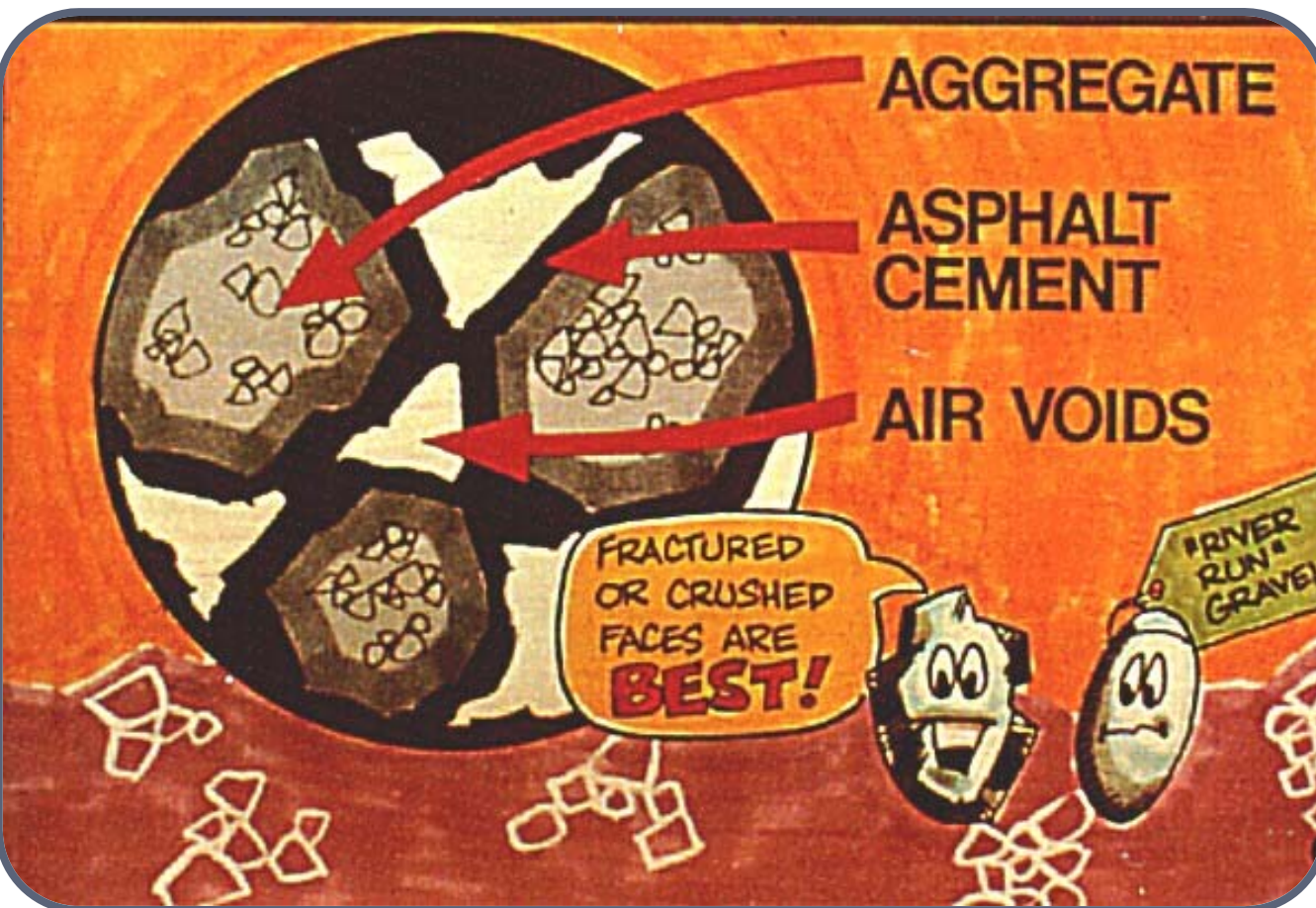
DOT Technology *Fast Forward*

Field VMA.

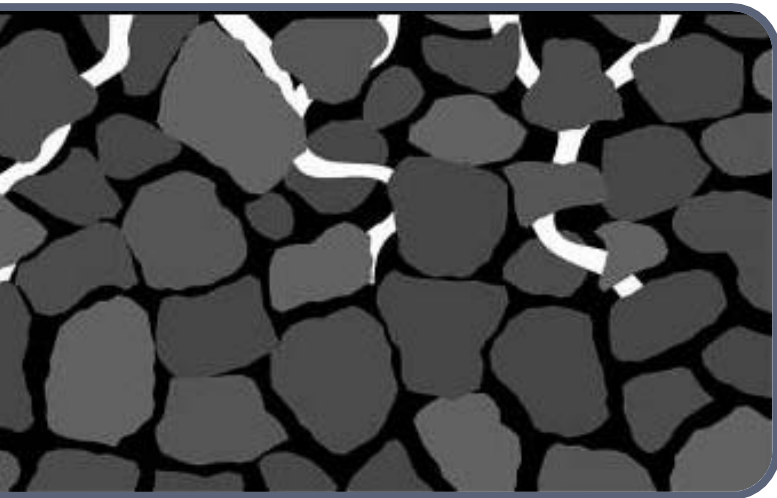
Longitudinal Joint Density.

Pay for Performance (PFP).

Hot Mix Asphalt (HMA)



Mat after Compaction



- 4%-8% theoretical air voids allow for needed expansion
- Aggregates moved closer together
- Provides cohesion, impermeability, and stability

Types of rollers

- Vibratory (a/k/a Breakdown)
- Pneumatic (a/k/a Rubber tire)
- Static Steel Wheel (a/k/a Finish)



oller in training



uture pneumatic rollers?



Construction



Collect Finish Roller – Smoothness & Density

Factors Affecting Compaction



arp over truck sides



Side Insulation



Lack of Densification



ack of Densification



Steering Guide and Straight Longitudinal Lines



- Lines shall not deviate more than 1-inch in 100-ft. for longitudinal joint pulls.
- Ensure end gate is down and that material sensors are operating properly.

chelon Paving



Construction

Ensure high performance longitudinal joints are constructed.

**String a line,
End gate down,
Auger kick-back paddles and extensions
installed,
No raking of the joint.**

Construction

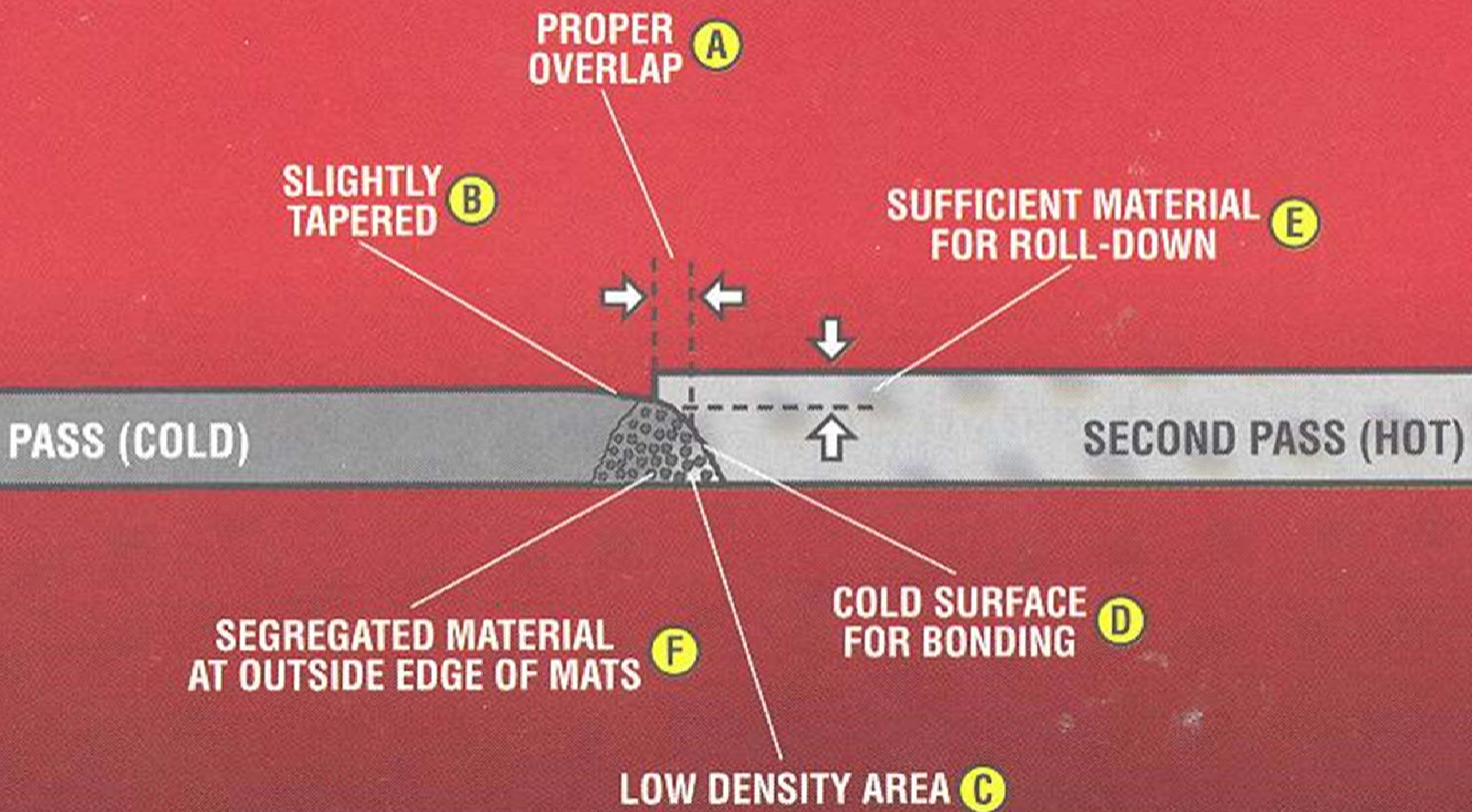


Longitudinal Joints Start with a Straight Line

Compaction Problems



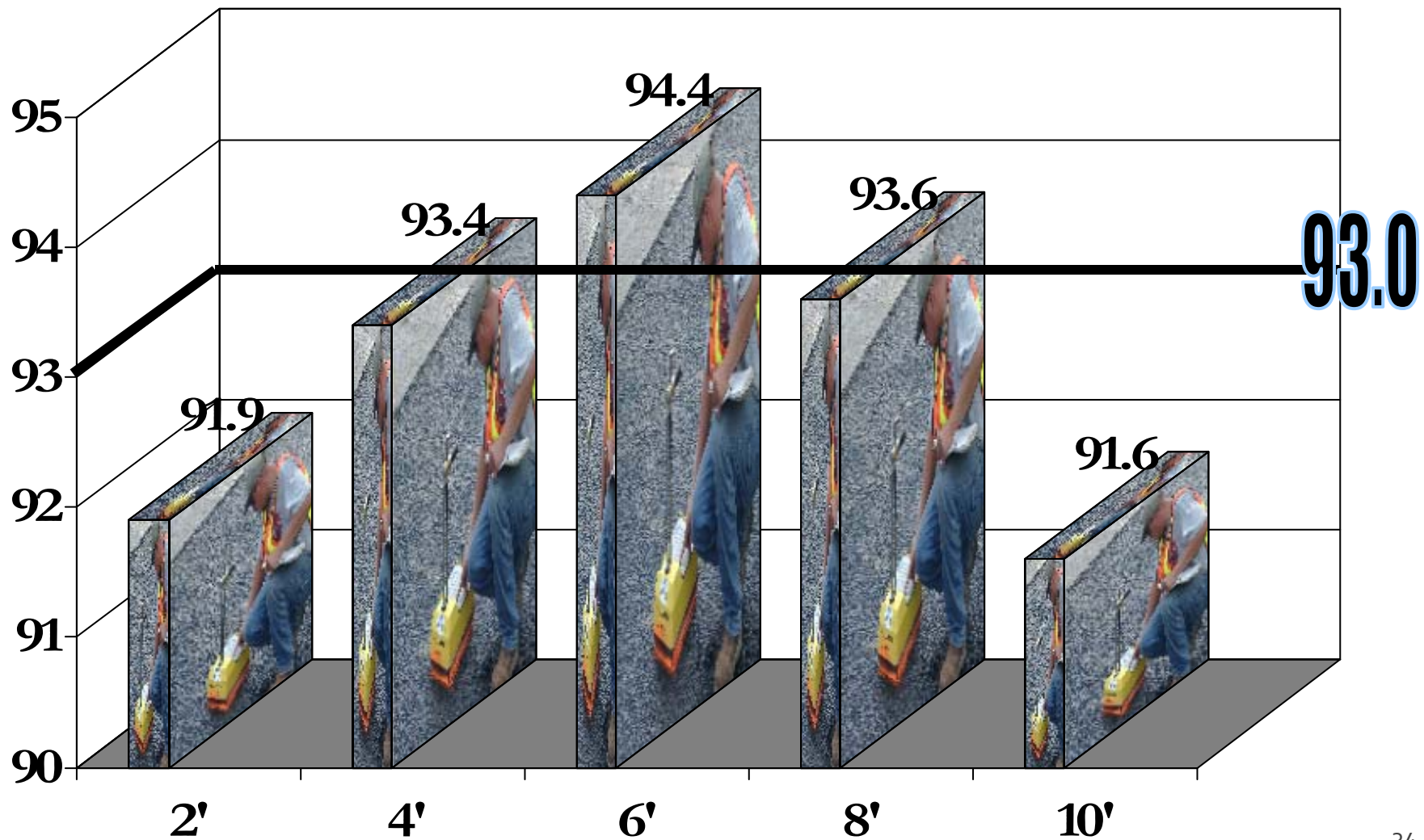
onstruction



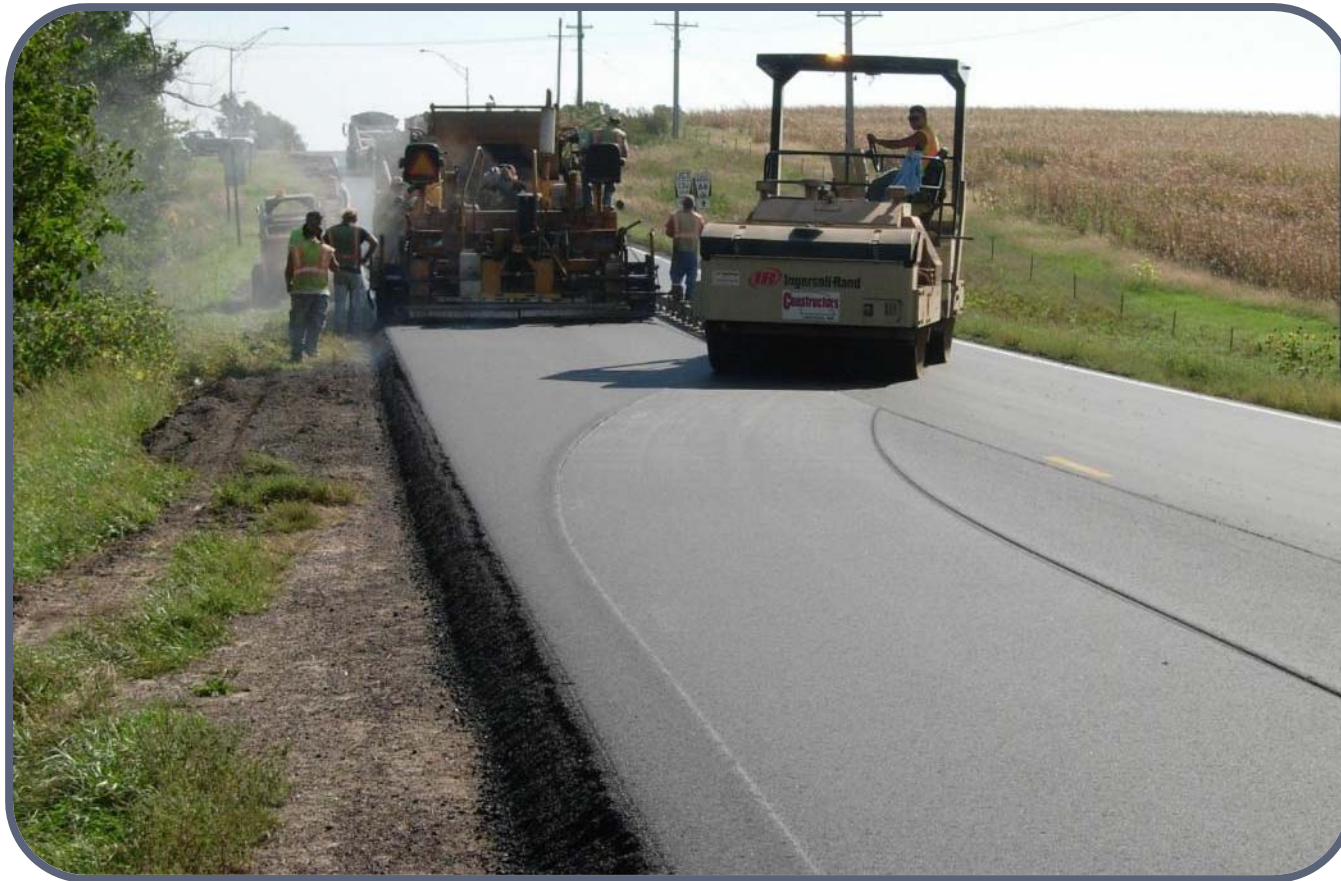
Construction



Construction

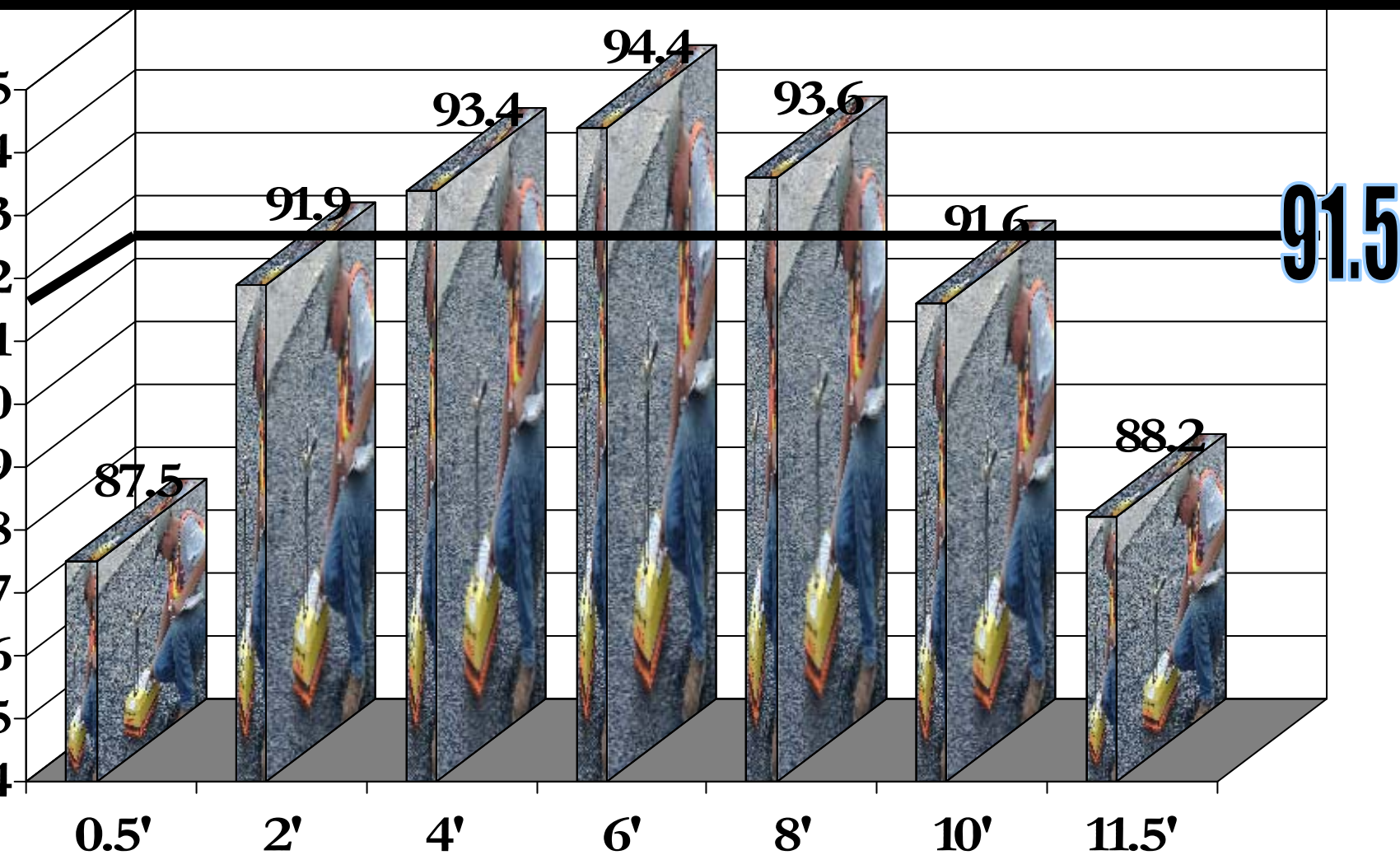


Construction

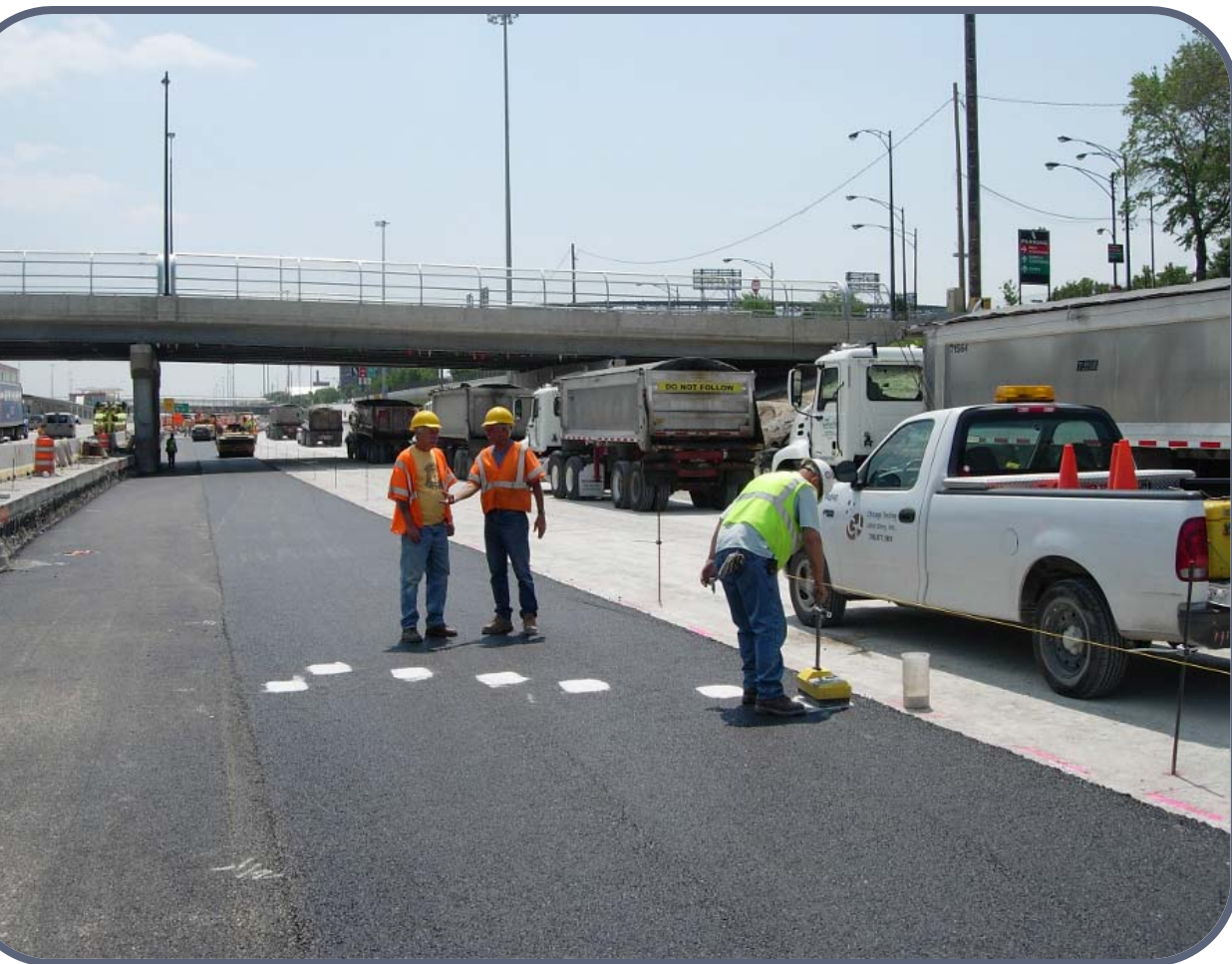


Why are we doing this?

What are we doing?



Construction



Density *Fast Forward*

What IDOT thinks we can achieve at joint?

90.0%

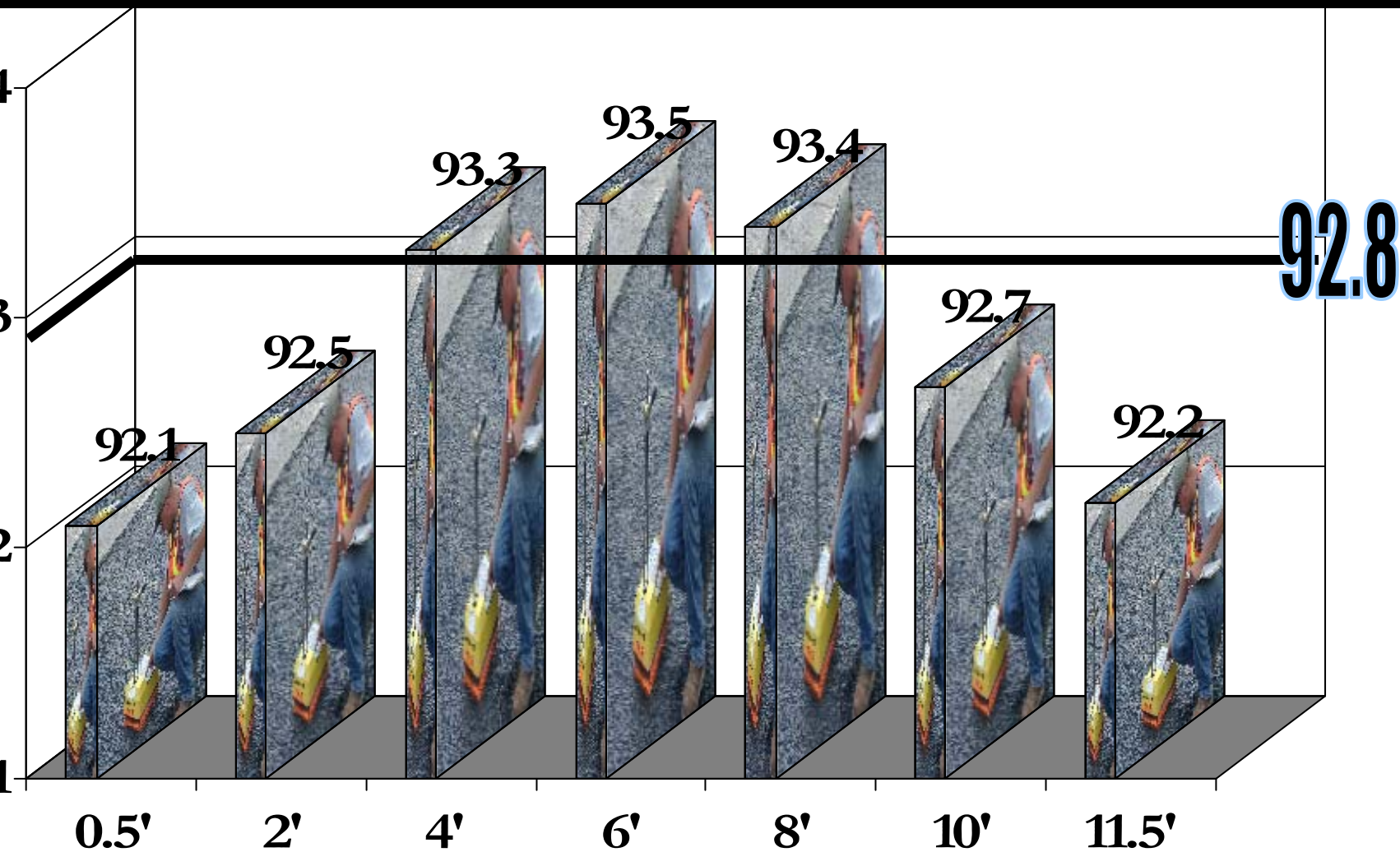
How shall it be measured?

Mat thickness off jt.

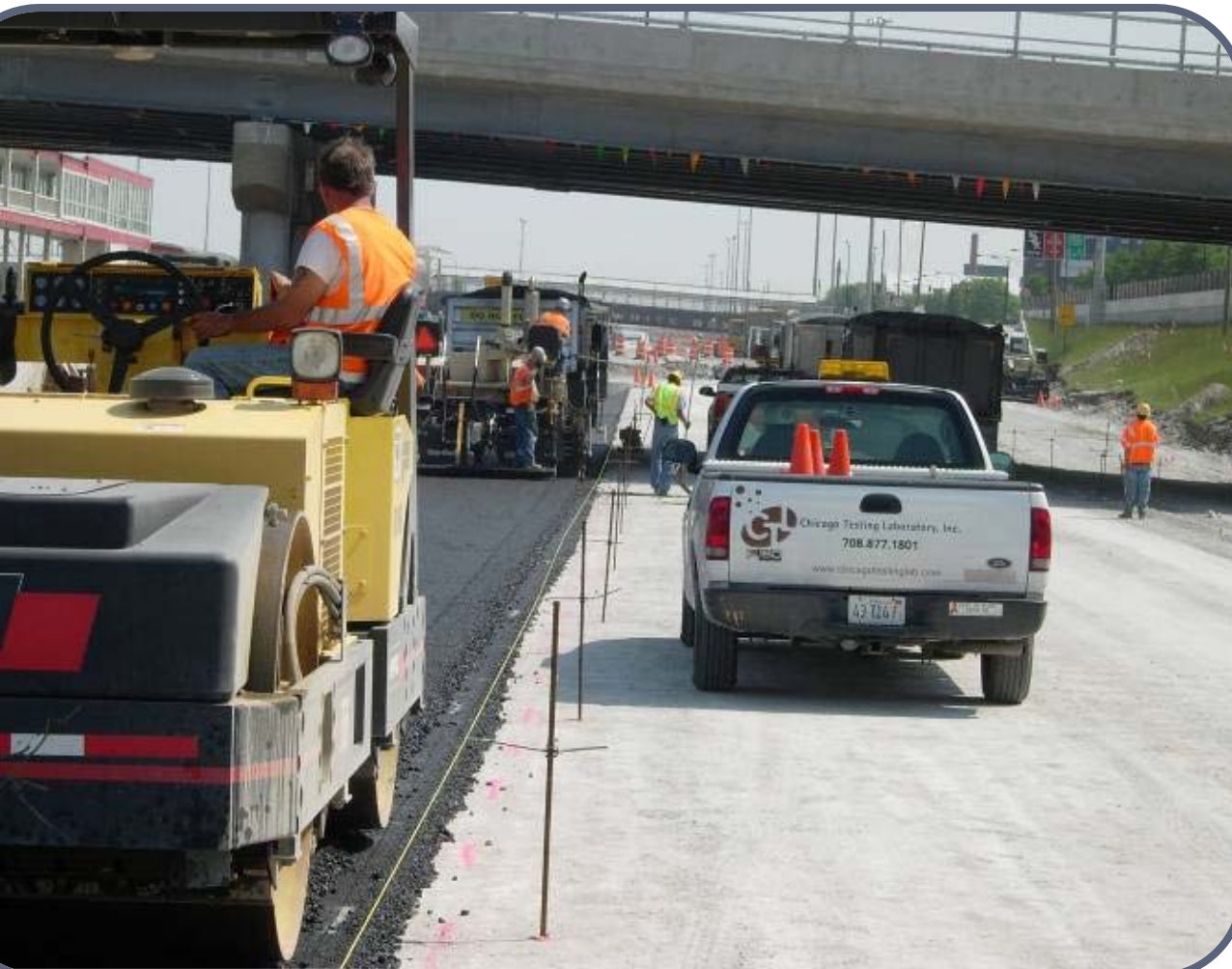
Where do we determine the average values from?

Jt. & mat separately

Where are we headed?



We are headed to hanging out
at the joint



Construction



Missing Auger Extension Leads to

Construction



Varying Surface Texture

Venice, Italy

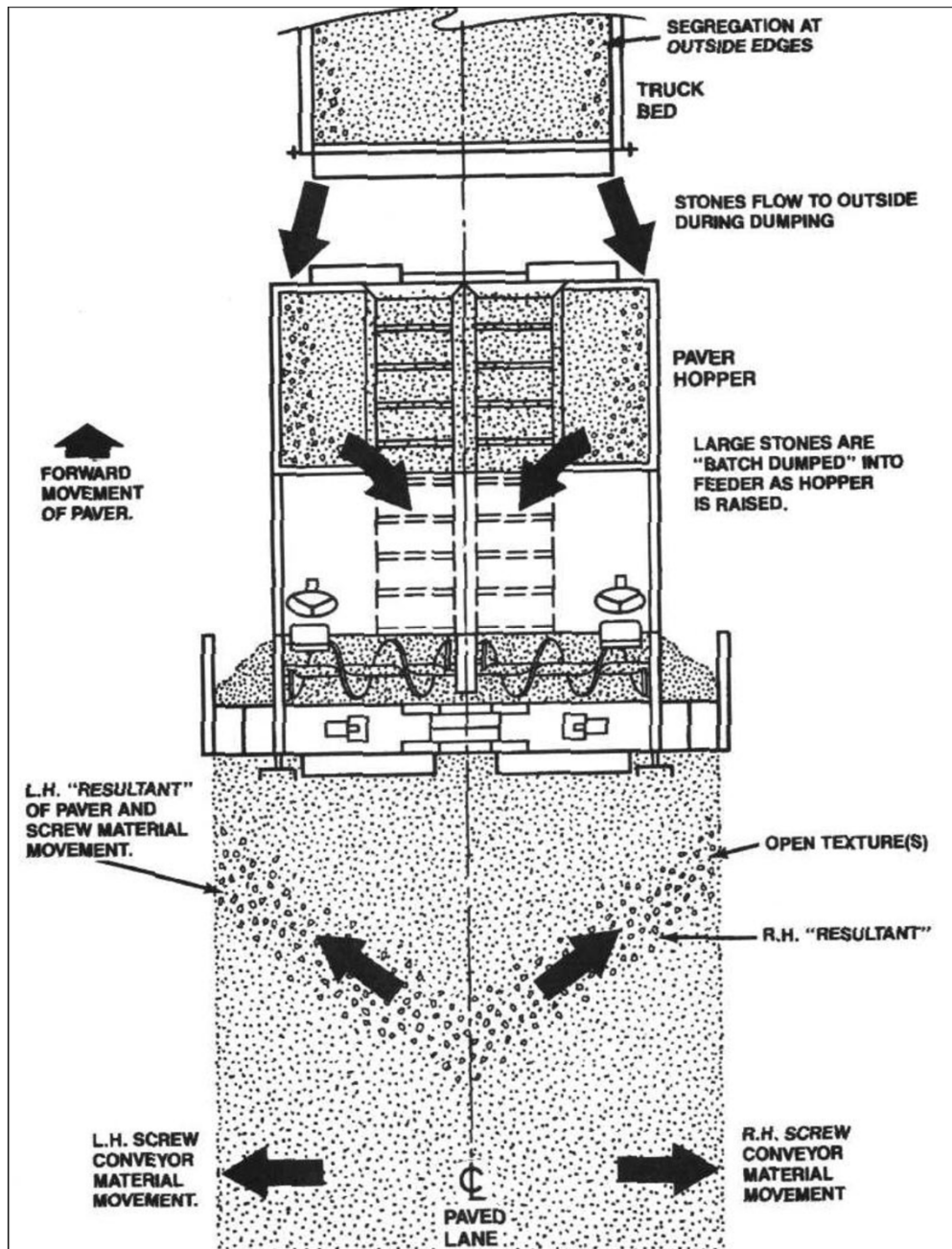


chelon Paving, Part II

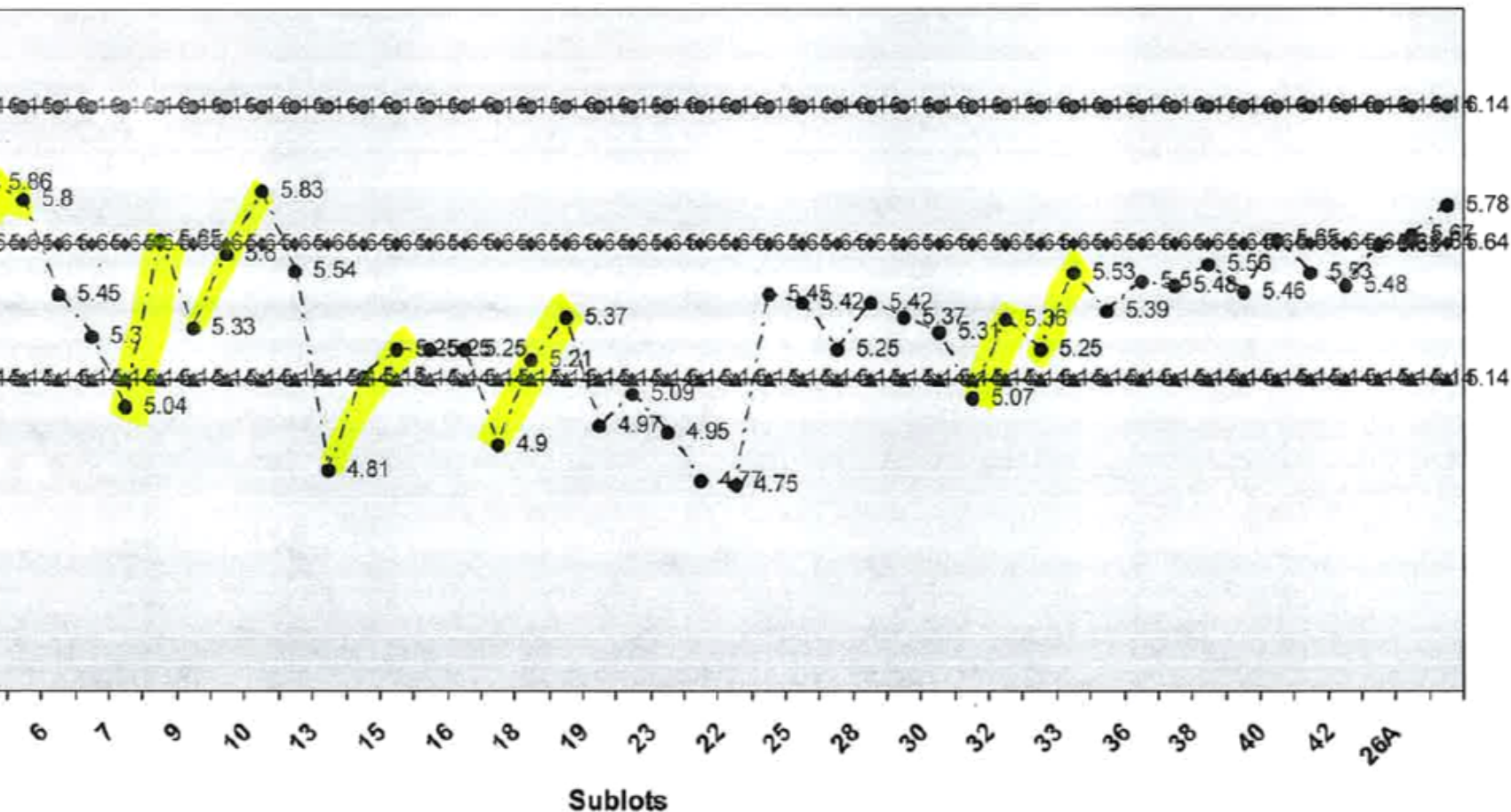


Hopper Operation: Hopper Wings





Segregation Identification 4 sieve v. Asphalt Content



Be it resolved that...

The segregation specification shall be reviewed, enhanced, and enforced.



Asphalt Paving
wards

According to Murphy



Asphalt Paving Awards, MPT

Appearance: overall neatness, no overspray or left-over materials

Approaches: blended well with the existing pavement

Degree of Difficulty: includes exceptional circumstances, maintenance of traffic, night paving, etc.

Edges: straight, uniform, true to the contour of the plans

Longitudinal and Transverse Joints: straight, well-finished, smooth and uniform

Construction



/Contactless Beam Superior Ride Quality

Construction



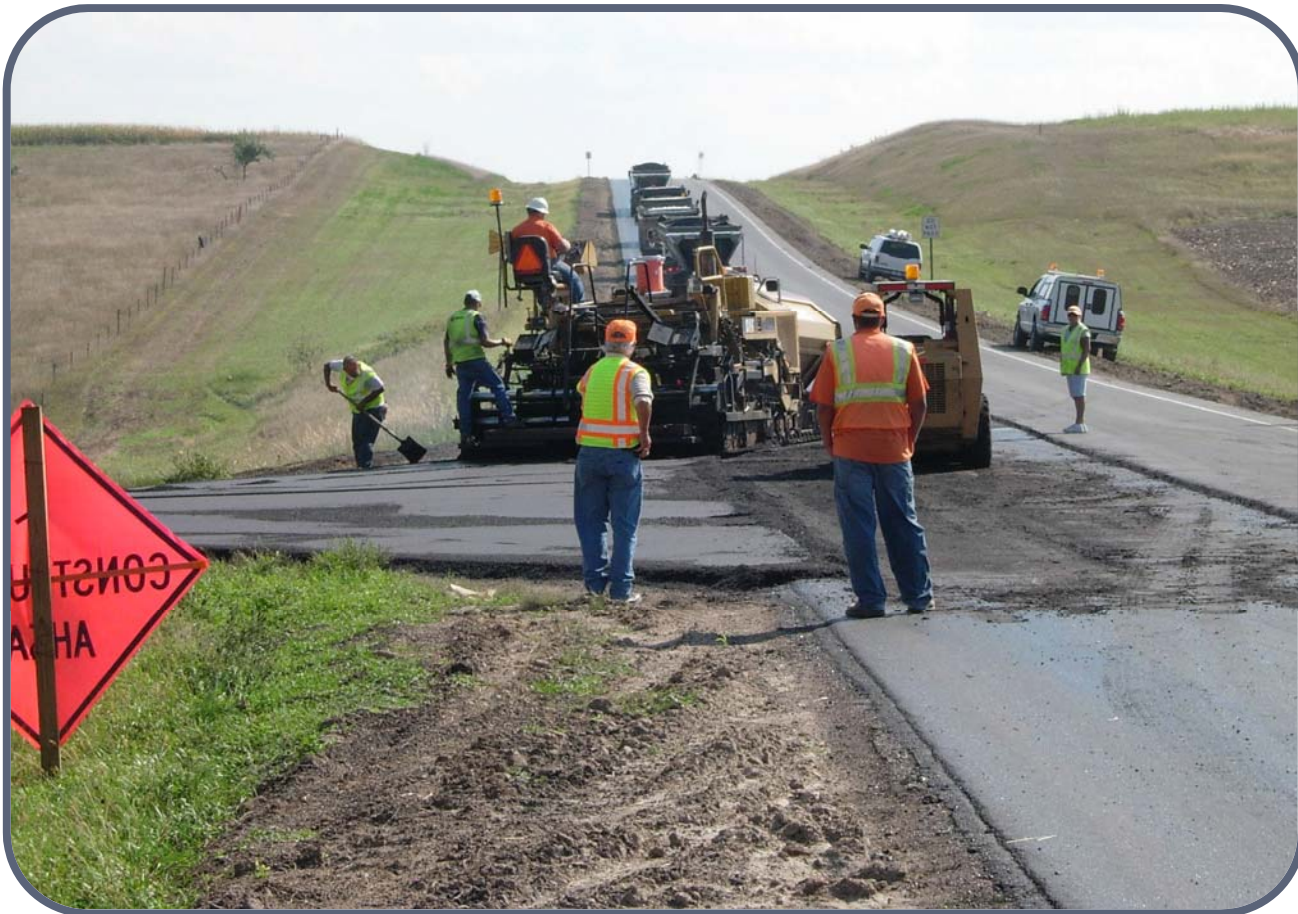
' Contact-less Beam = Improved Ride Quality

Construction



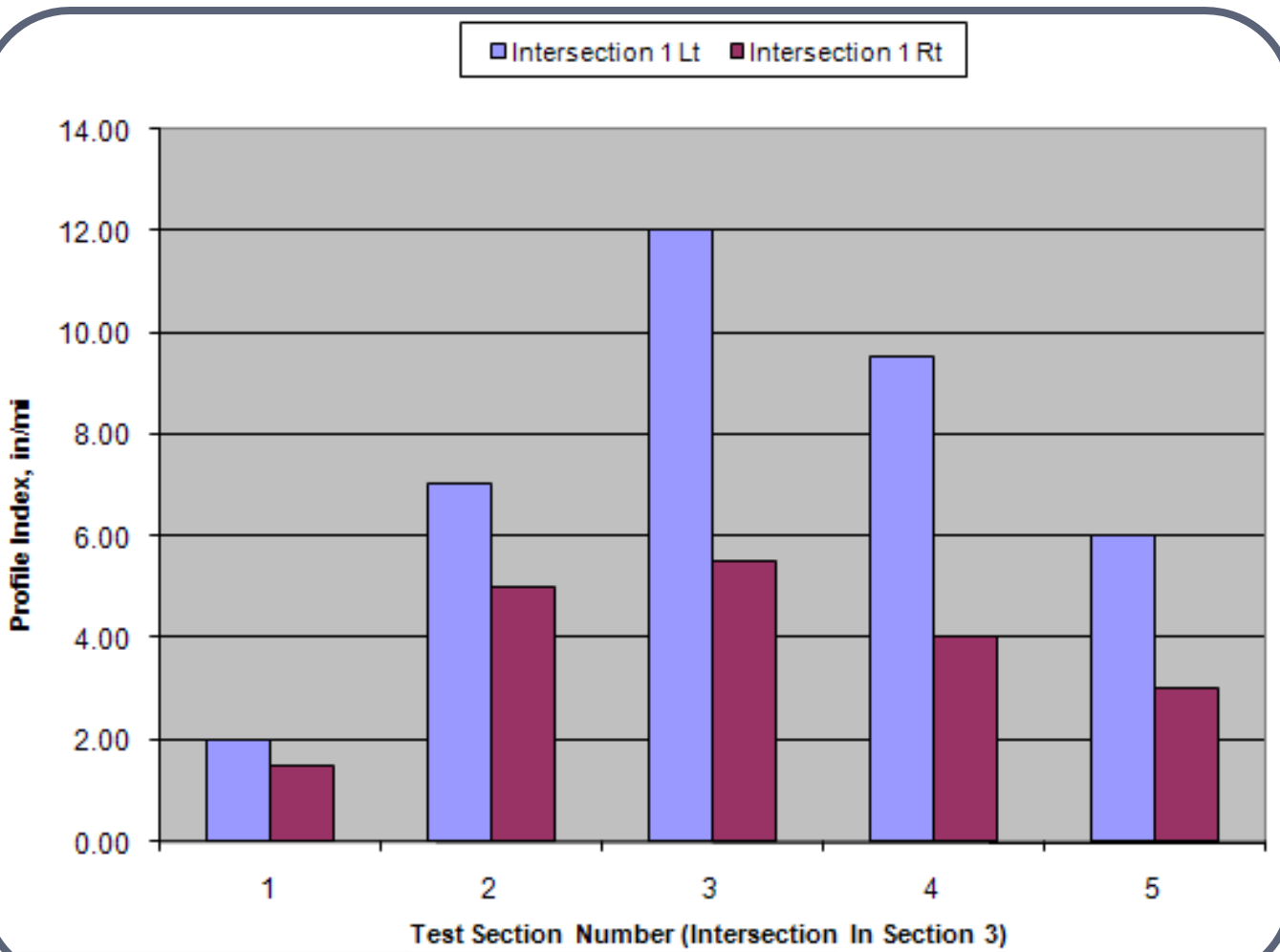
Joint Matching Shoe = Reduced Ride Quality

Construction



Pave Returns After Mainline

Construction



Construction

**Constructors paving through
intersection on Hwy. 66 at 72nd St.**

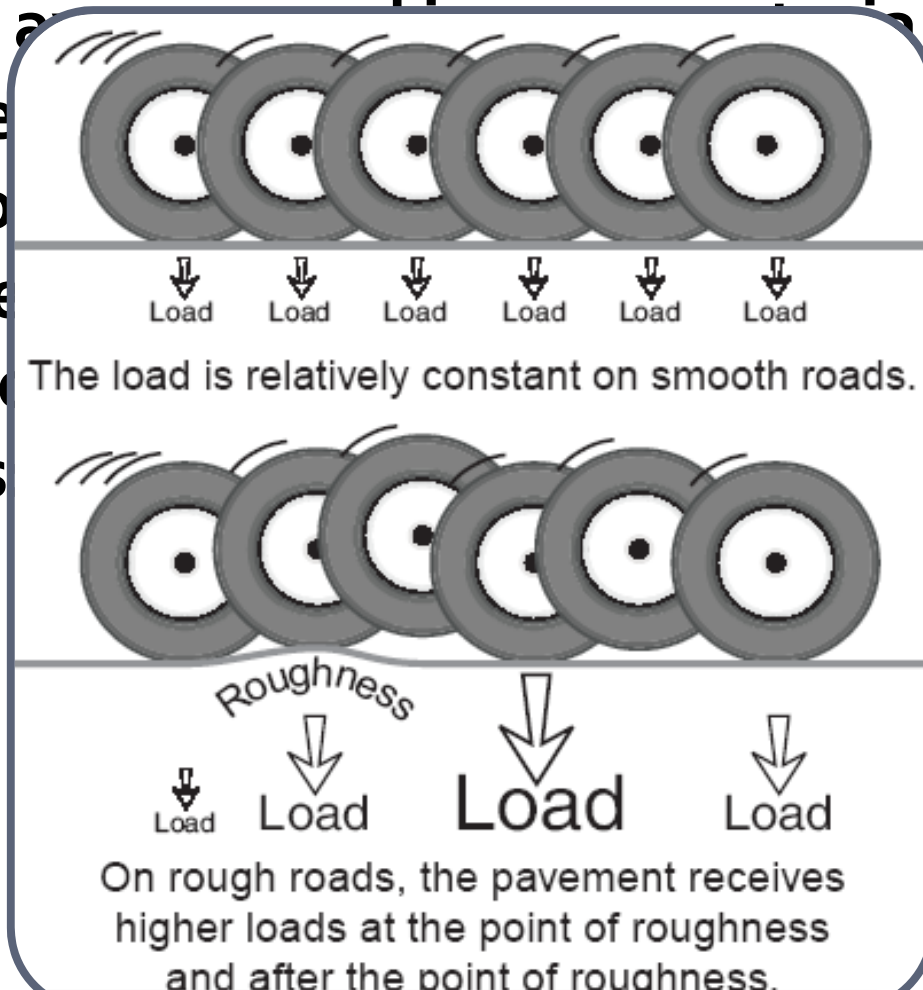


Pave Returns After Mainline

Asphalt Paving Awards, MPT

: Running a
e: must be
xture Uniform
nding, roller
neliness: C
lity Covers

production
surface
chedule set



Construction

Paver Speed

Angle of Attack

Head of Material

MA adway

Plainfield, IL

Dyke Road
19th St. with
Construction
BLR Ch. 37.

- Village of Plainfield,
- Hutchison Engineering, and
- K-Five Construction.



Van Dyke Road Aerial View



Pre-Pave Meeting

Plan ahead or go home...

Voids, VMA and VFA: The Building Blocks of Hot Mix Asphalt

30' grade reference

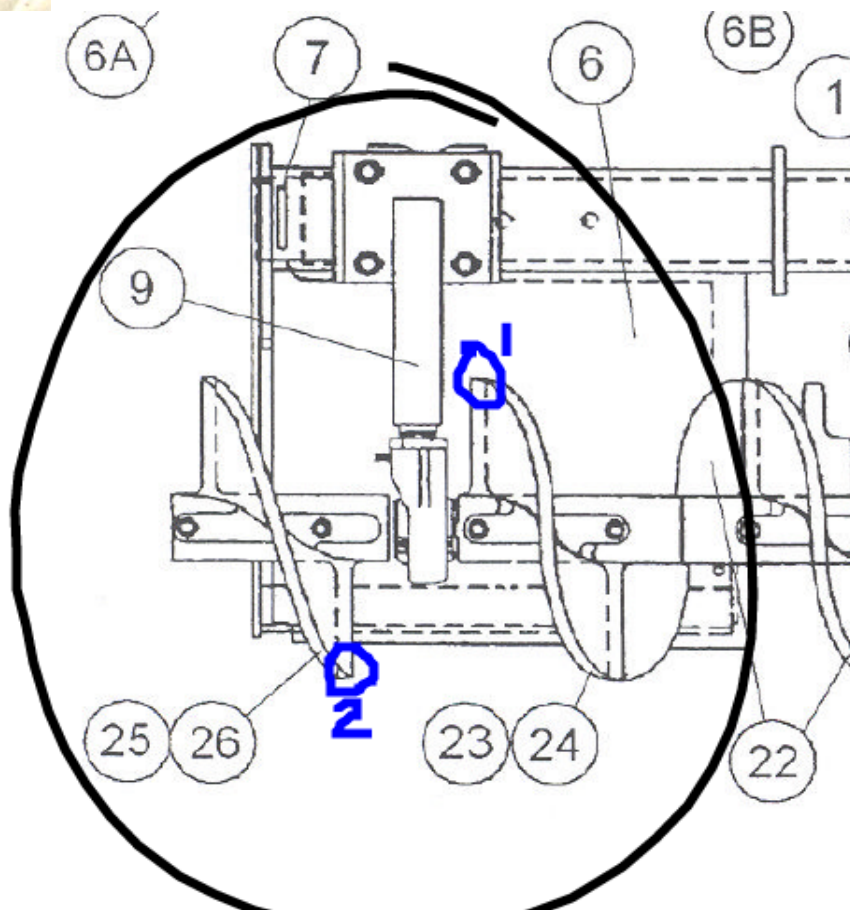
These quality notes taken by:
for all of your asphalt needs!

NAME	Rep.	Phone
P. Godwin	HUTCHINSON Eng	815-343-9322
Mike Hart	"	815-228-2572
KEN BLANK	"	815-230-2035
Bill Wentzel	"	630-783-8311
ERIC DUBOIS	NAME OF PLANTFIELD	815-488-9813
Randy Sotomayor	First RAILING	815/482-0433
Tim Murphy	FLA. Dept. of Transp.	713-874-9800
	Medwest Testing	
	Len Cox & Sons Excavating	
	Murphy PaveTech	

ools of the trade

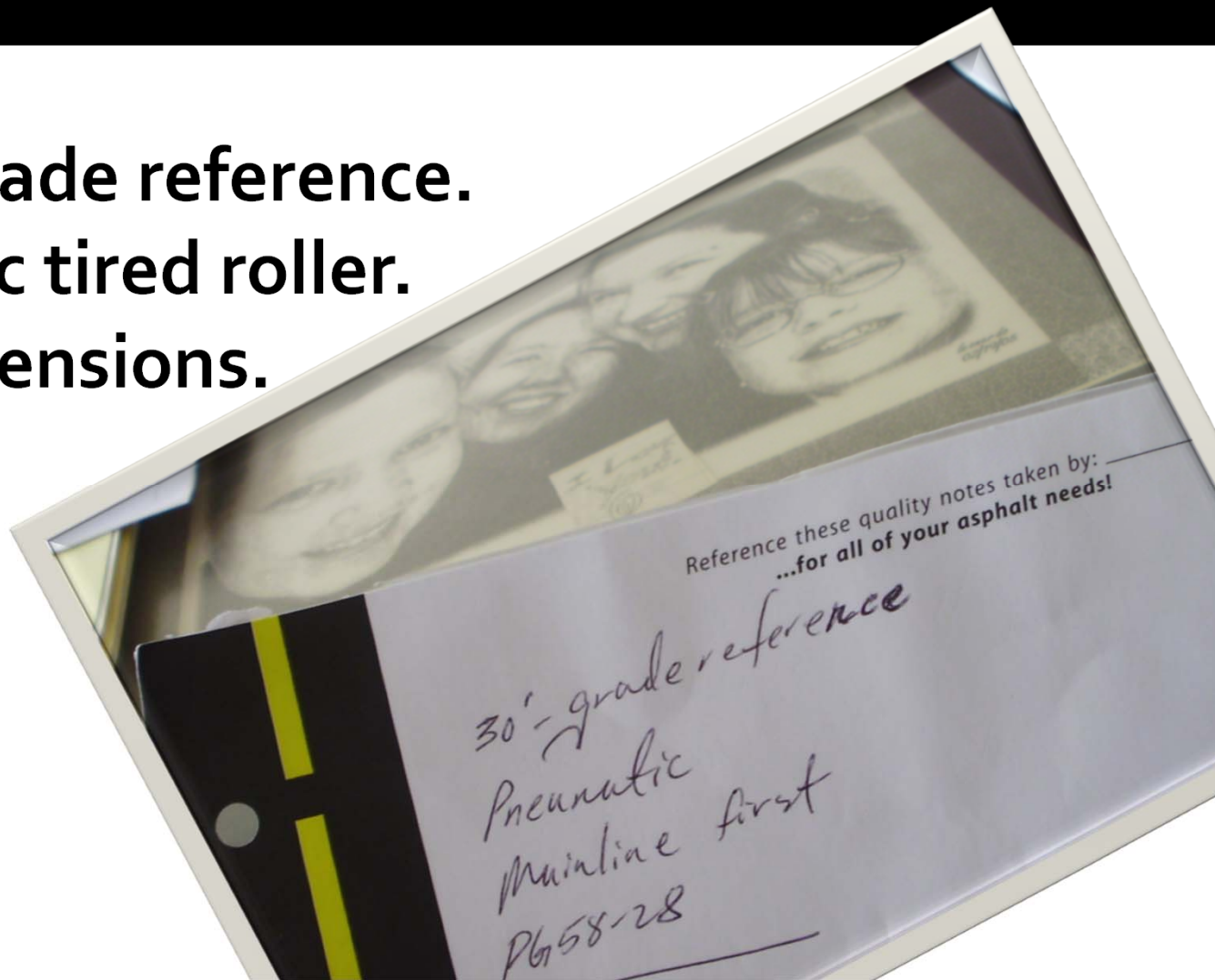


quipment

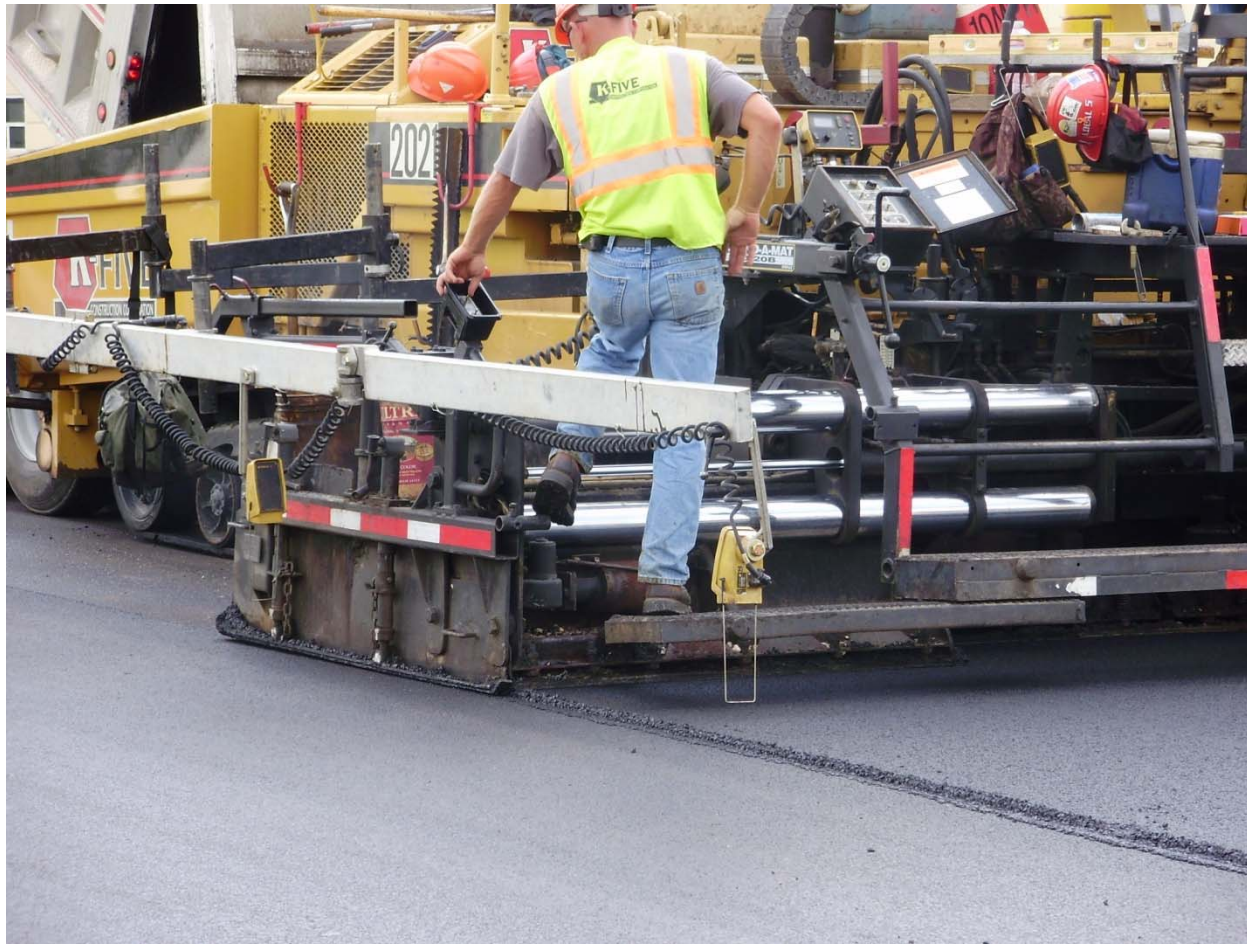


Plans and Spec's.

30-foot grade reference.
Pneumatic tired roller.
Auger extensions.



o-ft. grade reference working



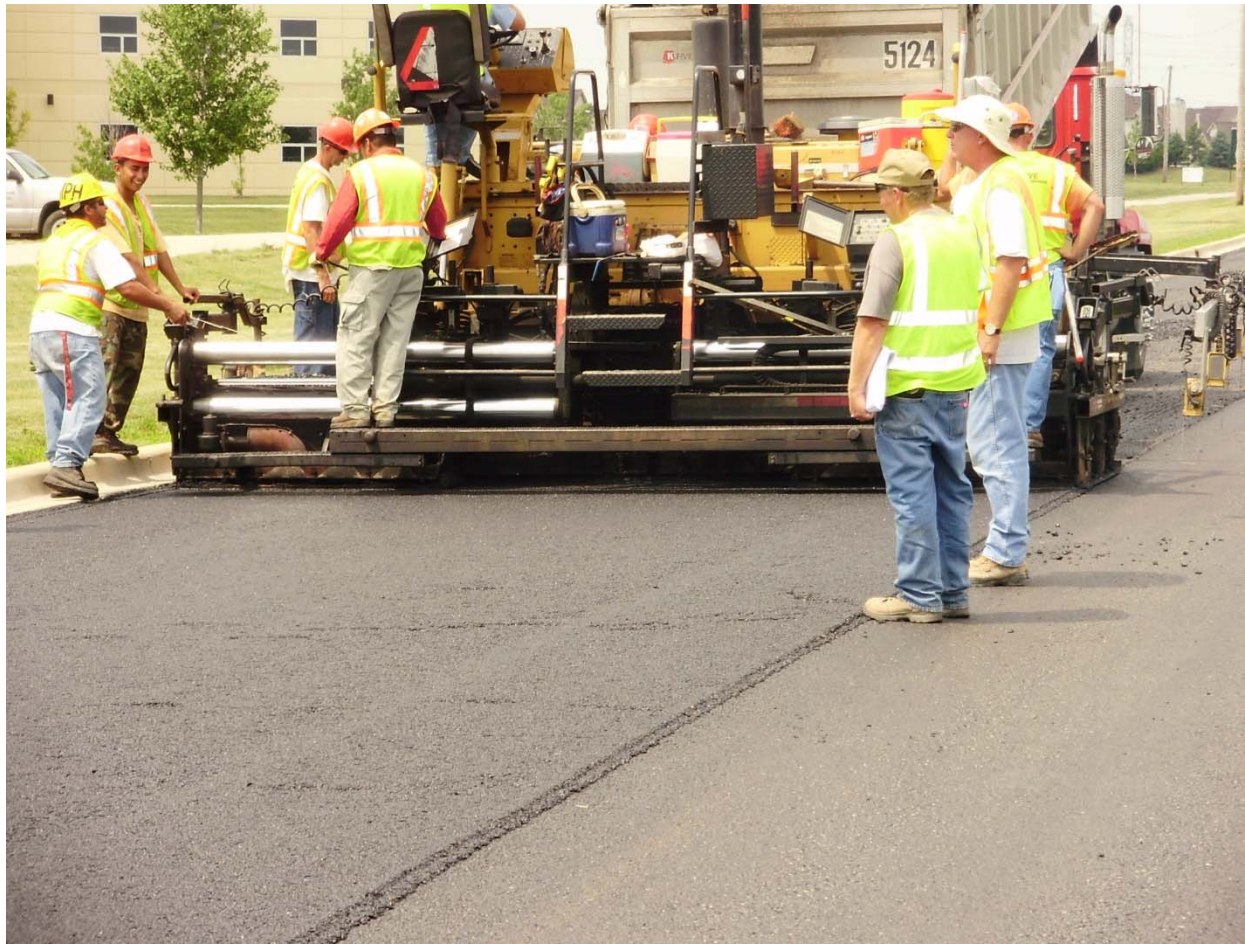
vibratory and pneumatic working side-by-side



uger extensions in and end plate /
ate down



Pre raking of longitudinal joint



ools of the trade



Plans and Special Provisions

Field VMA.

Longitudinal Joint Density.

**Full-Depth HMA w/ High RAP; PG58-28 per
BLR Chapter 37.**

Field Report

nski, P.E.



Midwest Testing Services, Inc.
3705 Progress Boulevard
Peru, Illinois 61354

Field Report

Business Phone: 815-223-6696
Fax Phone: 815-223-6659
E-Mail: mts37@comcast.net

Date: July 11, 2008
Portal-Portal 7:00AM - 1:30PM

Report No. 001
Job No.: Van Dyke Rd. Reconstruction & 119th St. Resurfacing
Project No.: Plainfield
Location: Plainfield

Weather:

High Temp. 86°
Low Temp. 62°

Vibratory Roller _____
Static Roller _____
Plate Compactor _____
Jumping Jack _____
Sheepsfoot _____

Other Skidsteer _____
Other Excavator _____
Other Port. Water Pump _____
Other Port. Vibrator _____

Density

MA Binder N50 @ 4% Voids.

Mat density average = 94.8

Confined joint density average = 95.0

Unconfined Joint density average = 90.6

ensity

IMA Surface N50 @ 4% Voids.

Mat density average = 94.3

Confined joint density average = 93.0

Unconfined Joint density average = 90.6

Be it resolved that...

Mat and confined joint densities
are equivalent.

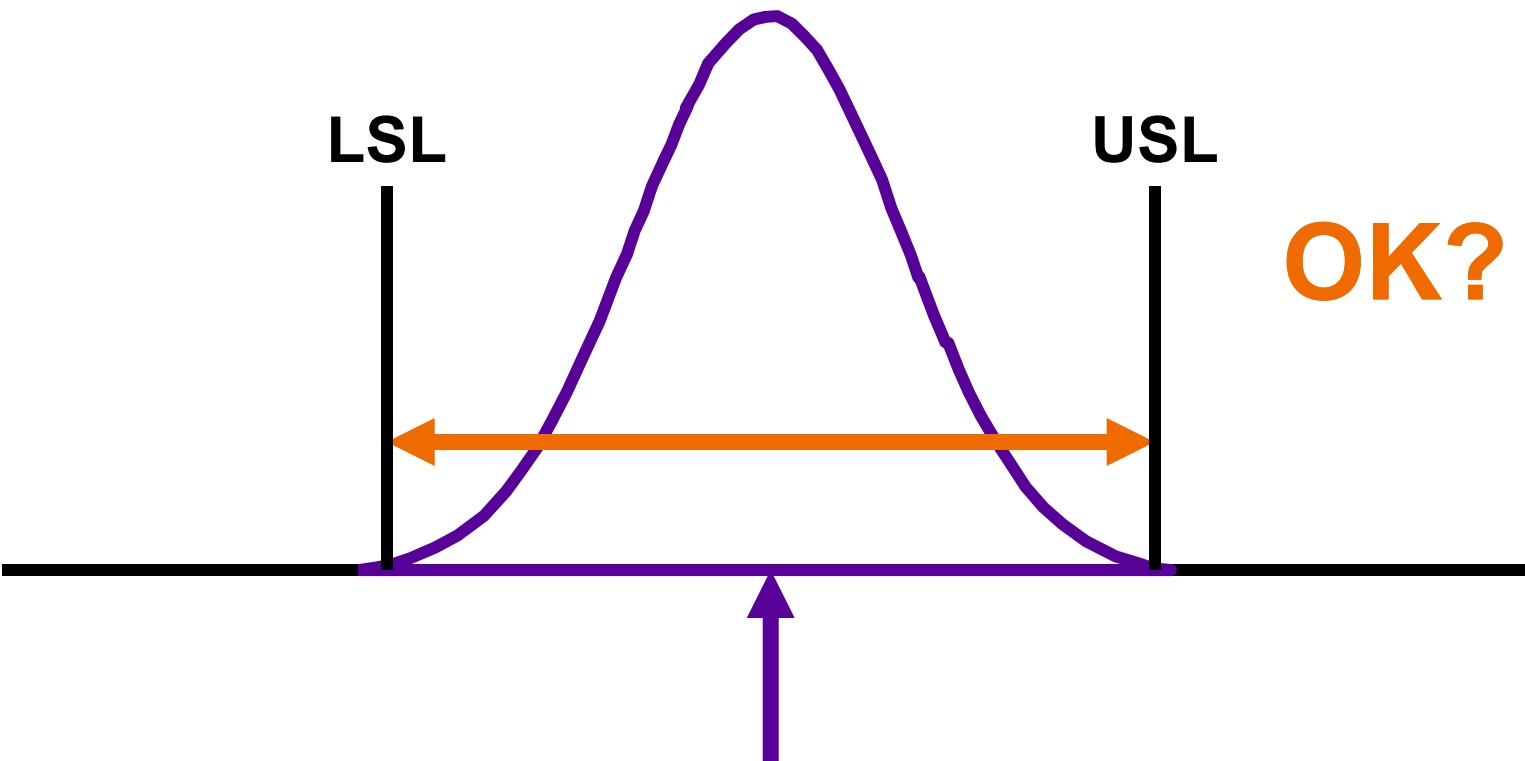
DOT Technology *Fast Forward*

Field VMA.

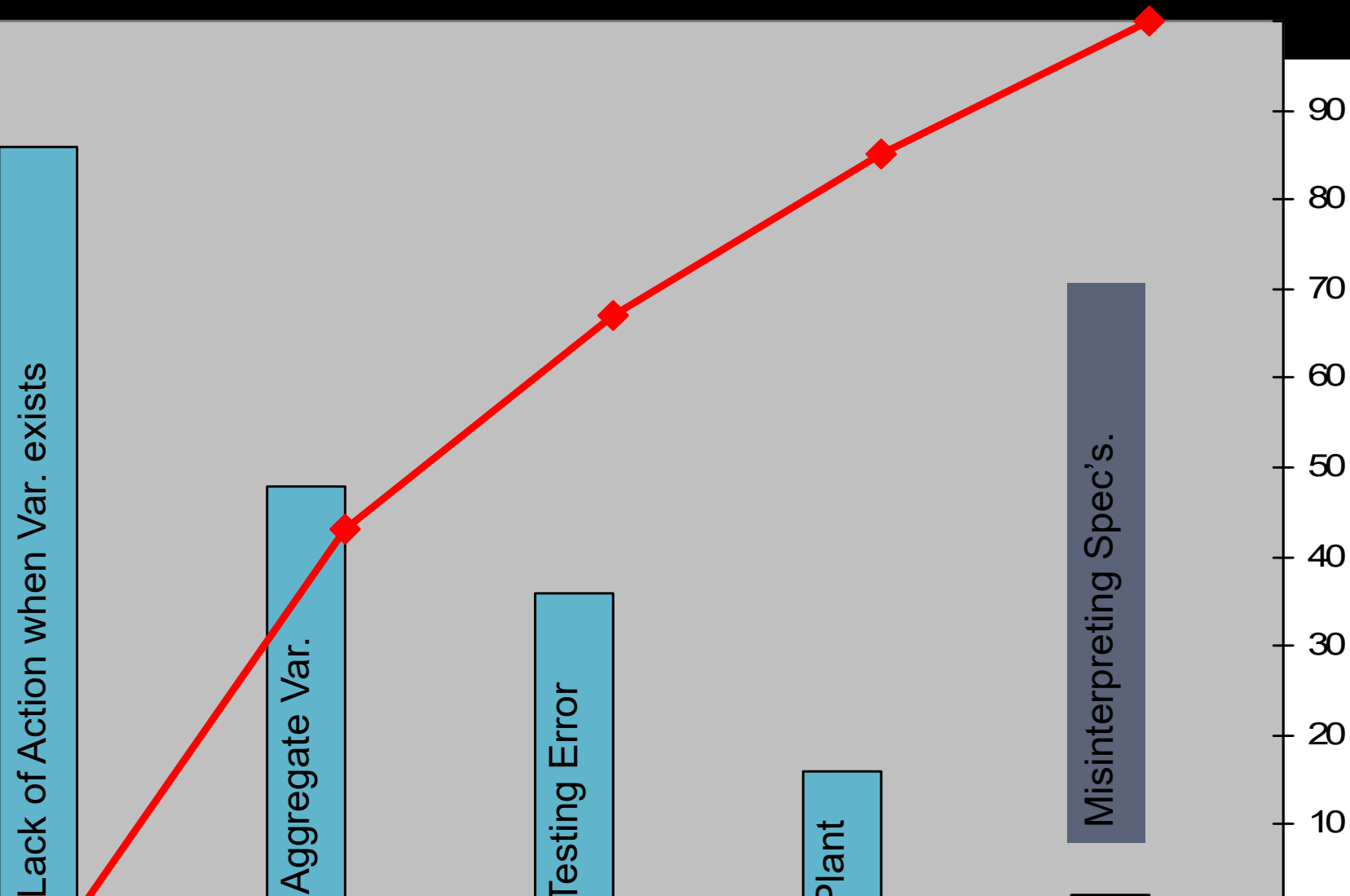
Longitudinal Joint Density.

Pay for Performance (PFP).

2C – Mean & Spread Relationship



Pareto chart of HMA problems as reported



MA QC Checklist

Project: Interstate 80

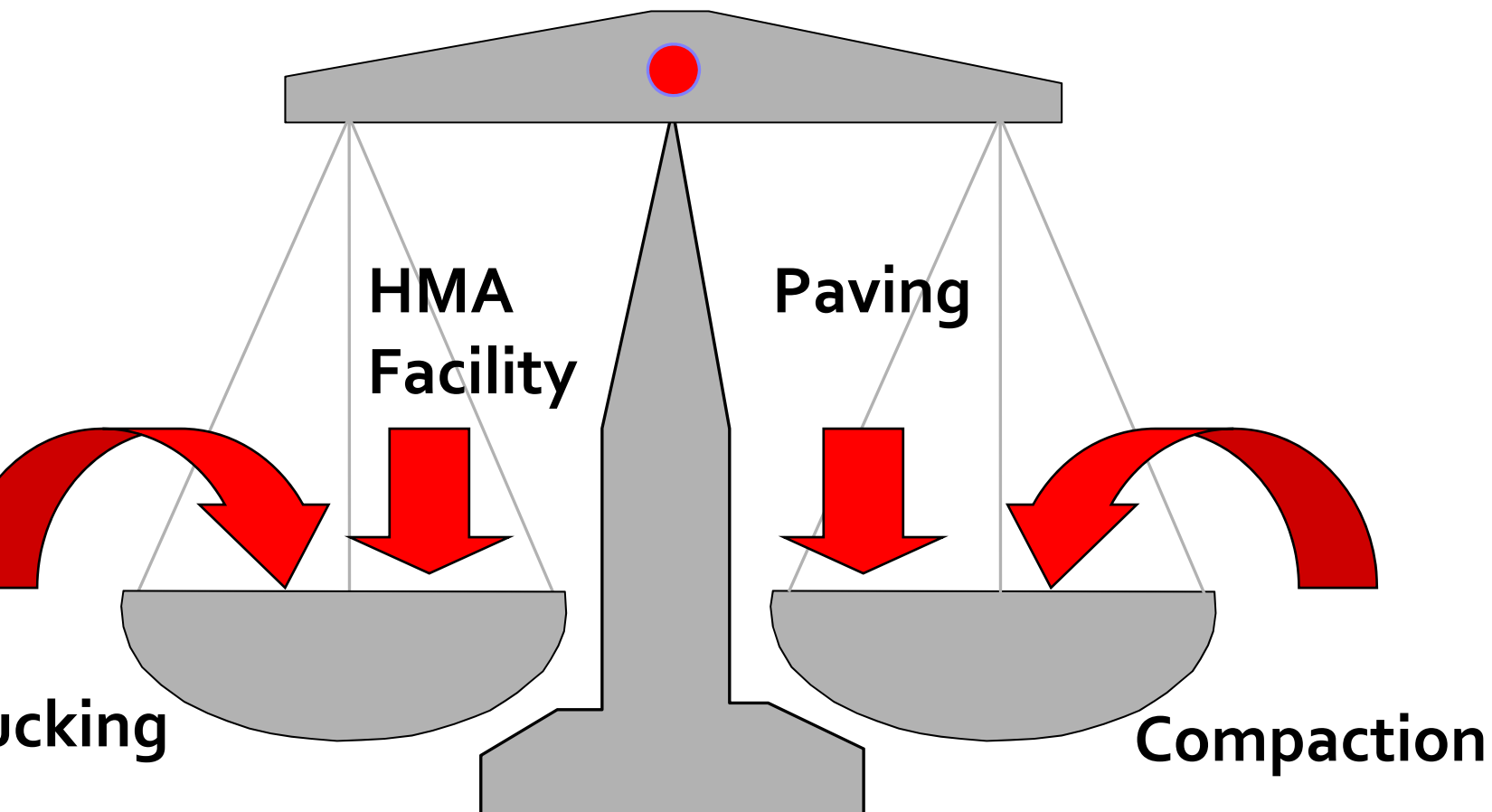
Inspector: Dr. Voids

Problem	Frequency
arying AC content.	/// (Meet w/Ryan)
ow in-place density.	// (Watch Jt.)
igh minus #200.	/// // (Design issue)
egregation.	/// (Training)
ompromised ride.	// (Spoke w/Pat)

Real-time results



balancing Production



customers



Customers & Family

aren't they what it is all about anyway?



South Side Irish St. Patrick's Day Parade

Everyone is invited just please RSVP.

Friday, March 15, 2009.

10 am: Parking begins.

11 am: Parade begins.

We will be our grubs. We have some Guinness

but you might want to bring some just 'in case'...



Eileen & Tim Murphy Madhouse
1234 So. Bell (2-blocks e. of Western)
Chicago, IL 60643

-779-2437 e-mail: evern85@gmail.com / tmurphy@murphypavetech.com

Questions?

