I-FIT Implementation
Lessons Learned
A Contractor's Point of View

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Illinois Asphalt Paving Association

OPEN ROAD PAVING COMPANY, LLC

CHAMPAIGN ASPHALT COMPANY
Paving Contractor
CHAMPAIGN, IL.

Today's Specifications

- **Hamburg Wheel (Rut Resistance)**
  - Design and Production Specification
  - Potentially a forced shutdown for failures
  - Applies to all mixes (except for N30s)
  - We purchased Equipment in 2012
  - Started testing all everything in both Design and Production in 2013
  - Learned a lot about sample preparation

Hamburg Wheel

Hamburg Wheel

Todays Specifications

- **Illinois Flexibility Index (IFIT) – (Crack Resistance)**
  - We started testing in 2016
  - Design and Production Specification (currently being phased in)
  - Potentially a forced shutdown for failures
  - Applies to all mixes (except patching and incidentals)
  - Aging Protocol currently being rolled out for surface
  - Will be used as a part of the “Indefinite Mix Designs Process”

I-FIT

- **Considerations for IFIT in a QC Lab**
  - Contractors are not required to Perform IFIT Testing (or Hamburg)
  - Space – We are already maxed out
  - Saws – Precision / Messy
  - Saw Blades are critical
  - Cutting Jigs (skill / art)
  - Temperature Control
  - Time
  - Already doing QC testing (QCP / PFP)

IFIT

IFIT

IFIT

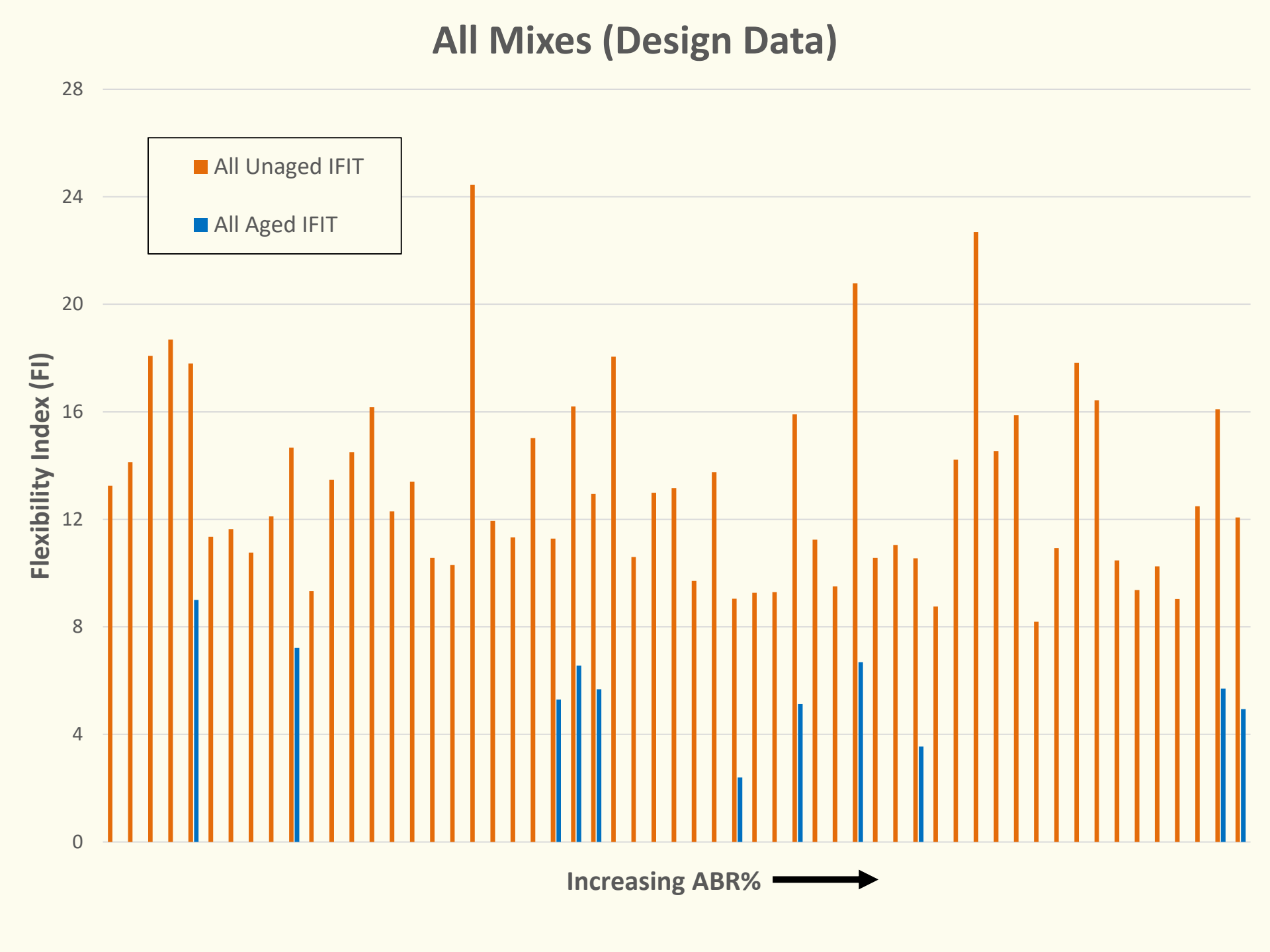
Various Mixes

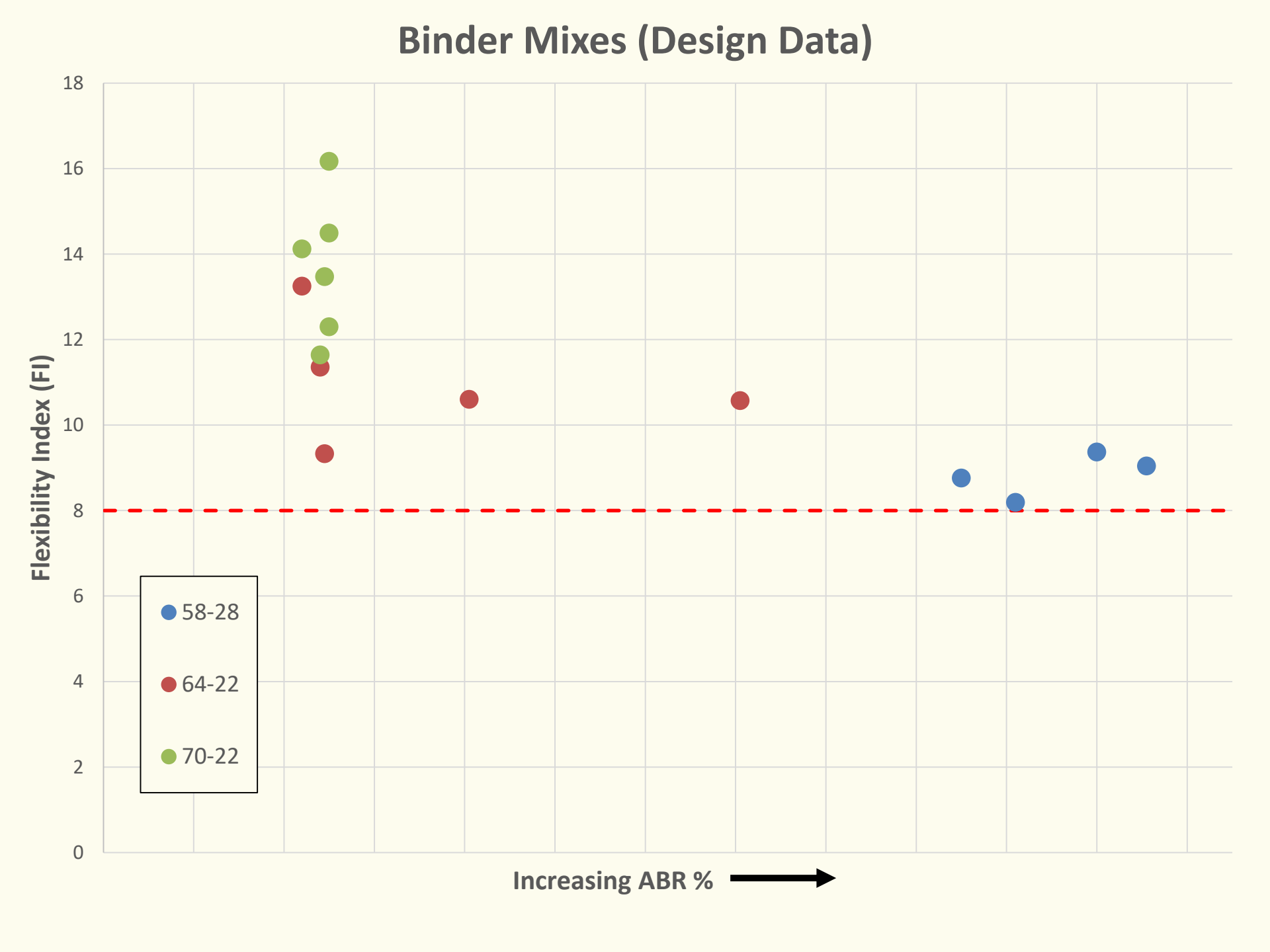
Mix Type	Gyrations	AC Grade
Binder	50	64-22
	70	64-22
		70-22
	90	64-22
		70-22
		70-28
Fine Graded Level Binder	50	64-22
	70	64-22
		70-22
		64-28
	90	64-22
		70-22
		70-28

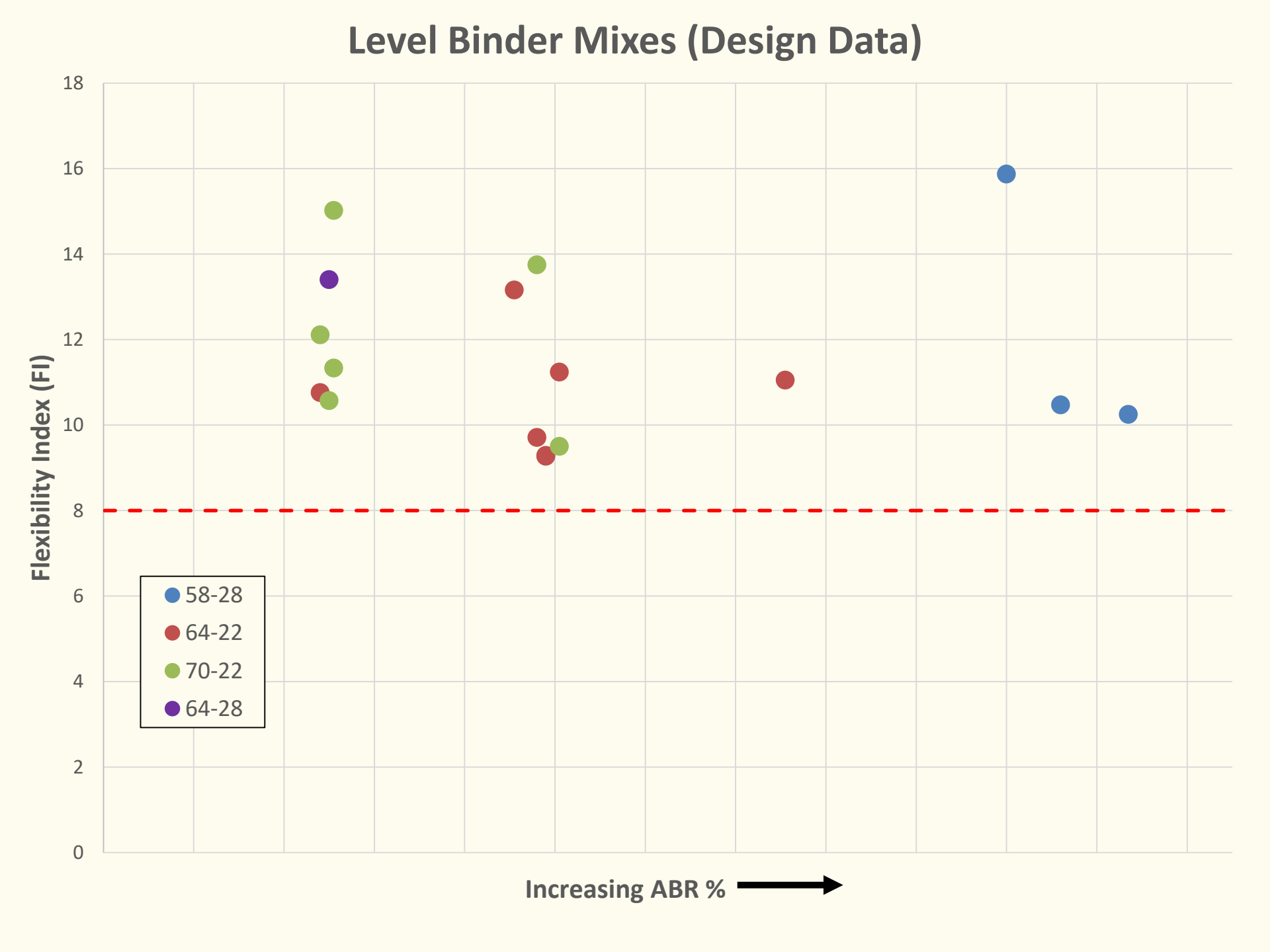
Mix Type	Gyrations	AC Grade
C Surface	30	64-22
	50	64-22
		70-22
	70	64-22
		70-22
D Surface	50	64-22
	70	64-22
		70-22
		64-28
	90	64-22
		70-22
		70-28
E Surface	90	70-22

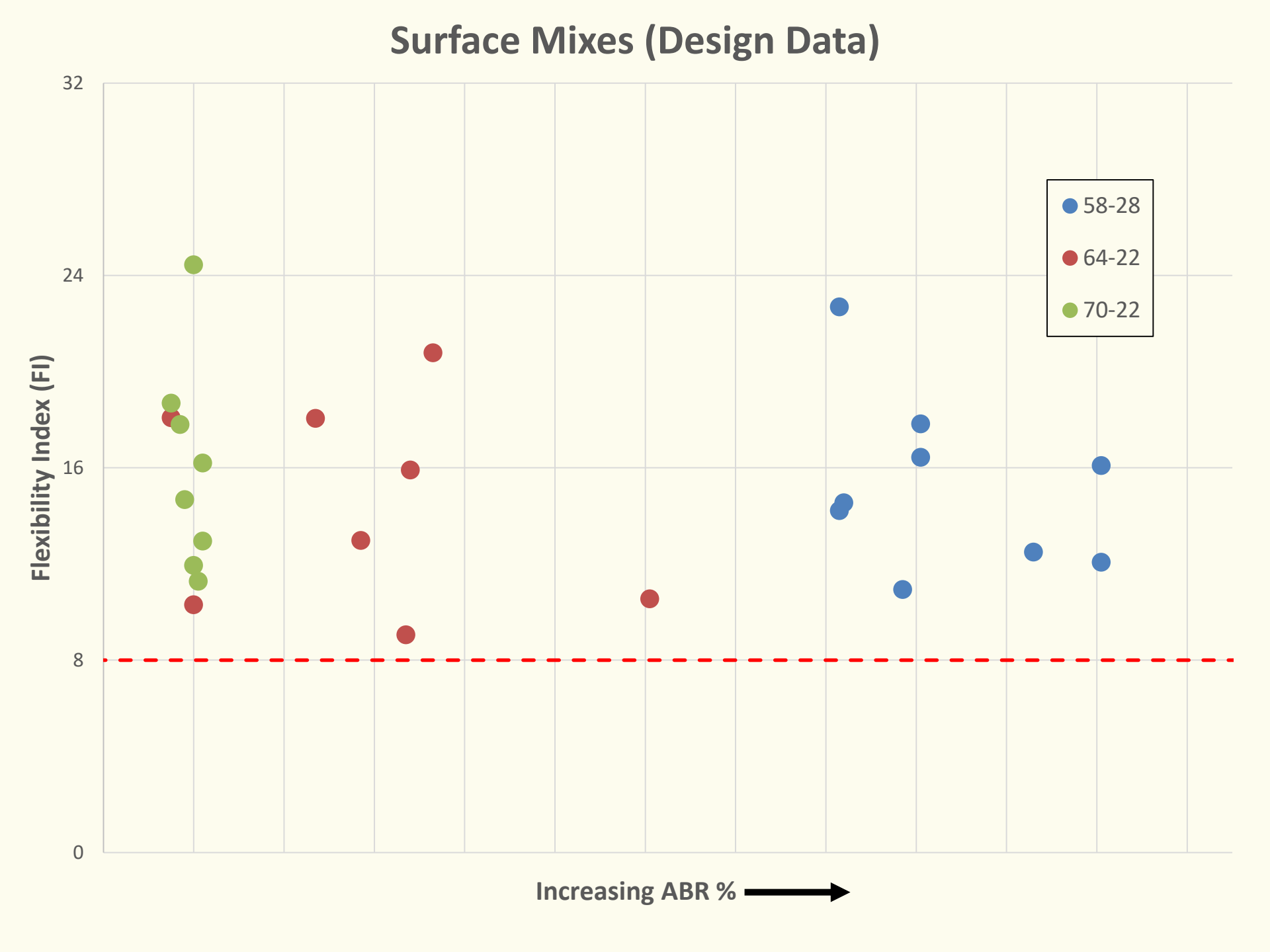
Where Do We Stand?

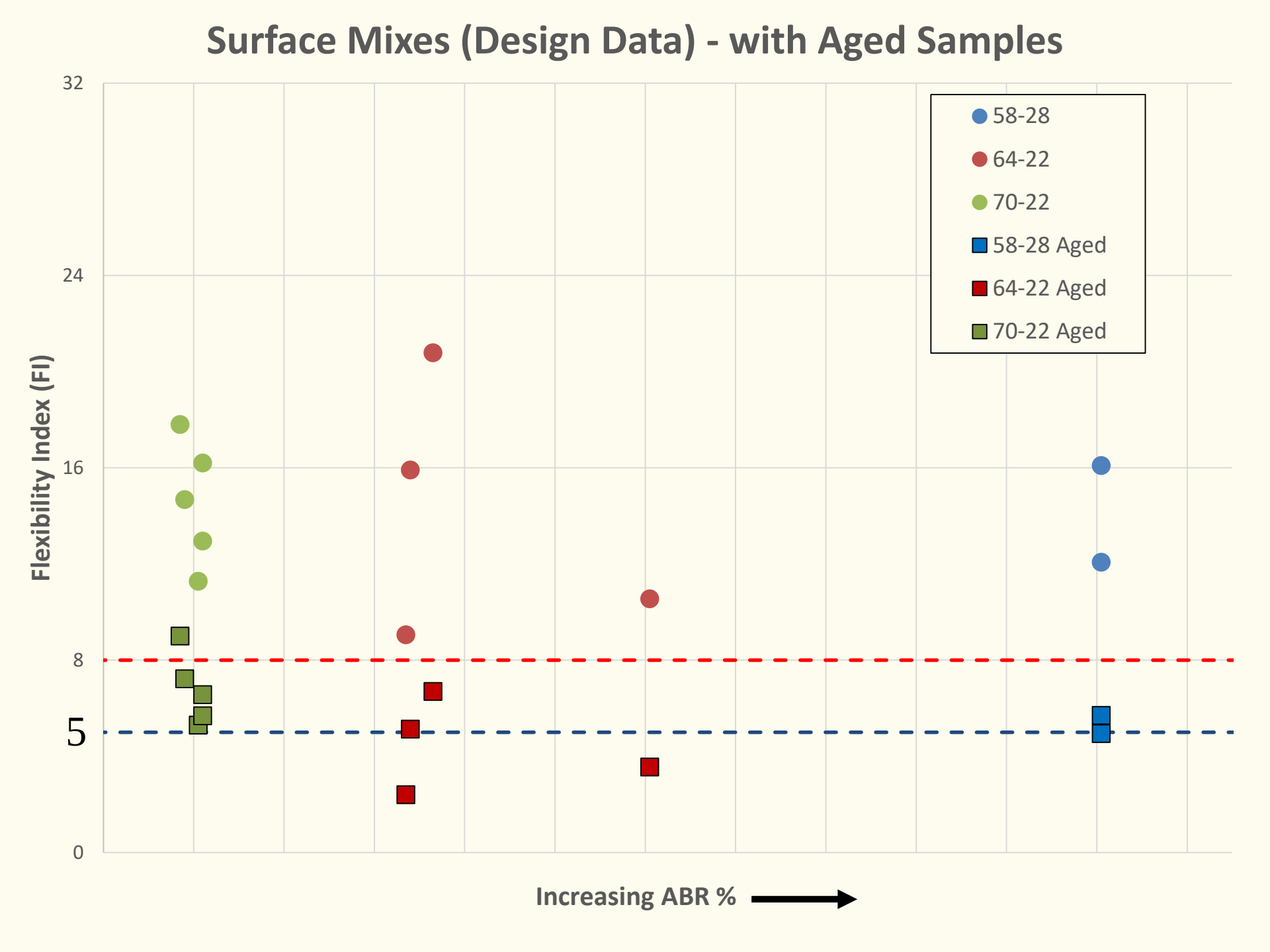
- **Where do your mixes fall?**
- **How do we make them better (Higher FI)?**
  - ***Without hurting Hamburg***
- **Are there simple adjustments that can be made?**
- **How Does the Aging Protocol play into things?**


All Mixes (Design Data)
28
24
20
16
12
8
4
0
Flexibility Index (FI)
All Unaged IFIT
All Aged IFIT
Increasing ABR%


Binder Mixes (Design Data)
Flexibility Index (FI)
18
16
14
12
10
8
6
4
2
0
58-28
64-22
70-22
Increasing ABR %

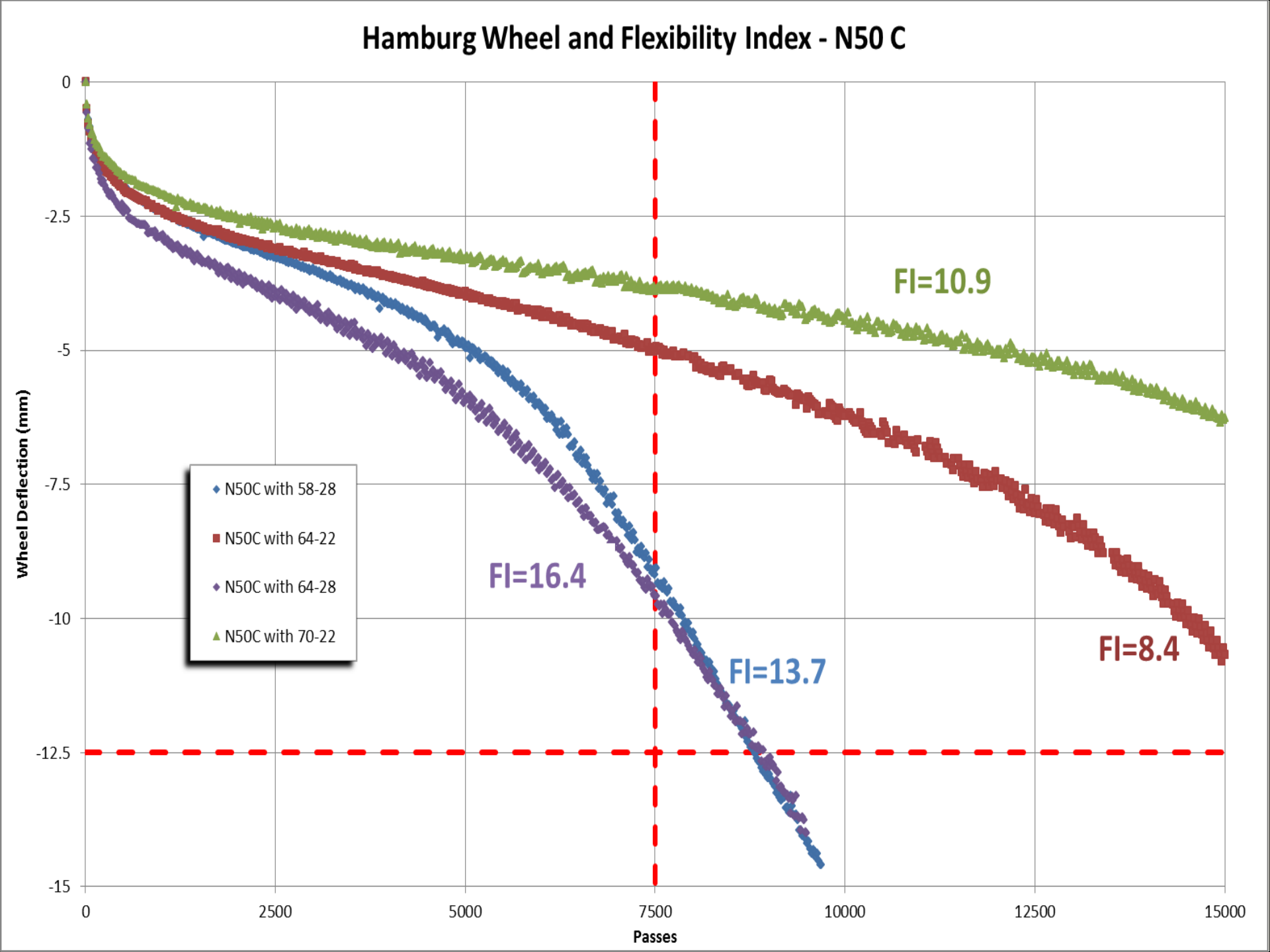

Level Binder Mixes (Design Data)
Flexibility Index (FI)
18
16
14
12
10
8
6
4
2
0
58-28
64-22
70-22
64-28
Increasing ABR %

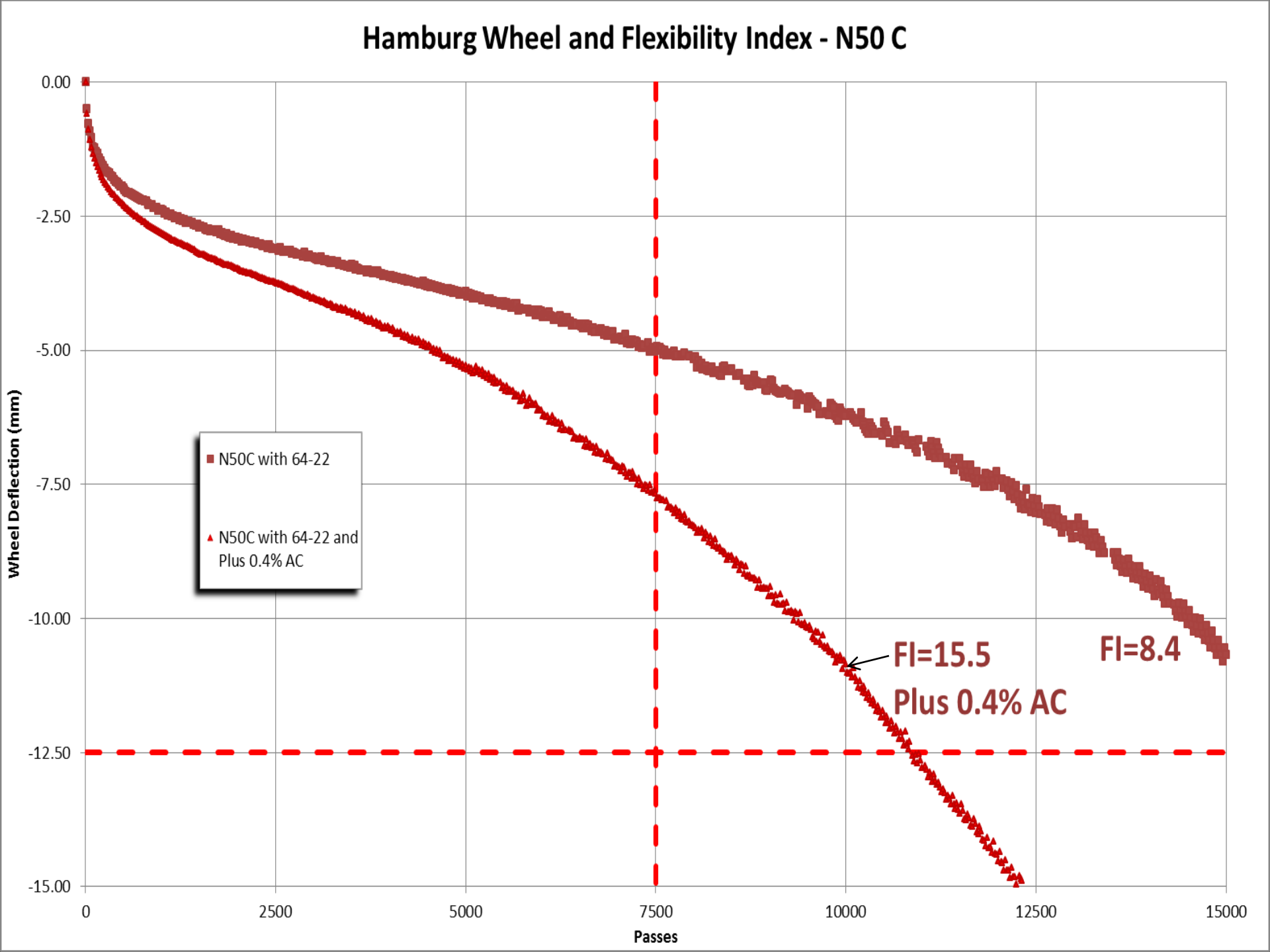

Surface Mixes (Design Data)
32
24
16
8
0
Flexibility Index (FI)
Increasing ABR %
58-28
64-22
70-22

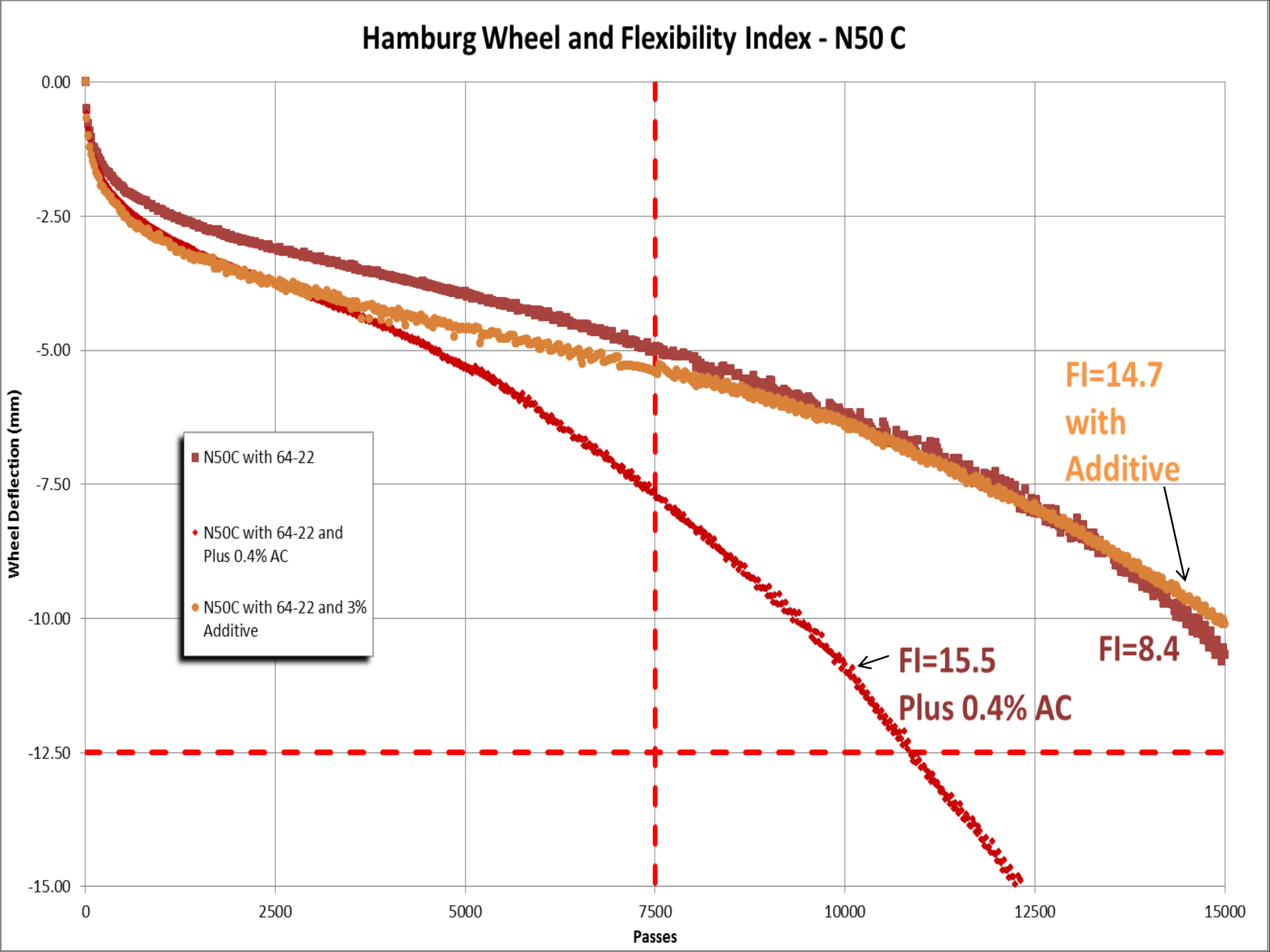

Surface Mixes (Design Data) - with Aged Samples
32
24
16
8
5
0
Flexibility Index (FI)
Increasing ABR %
58-28
64-22
70-22
58-28 Aged
64-22 Aged
70-22 Aged

What Next?

- **What influences the IFIT value of a mix?**
  - Mix Size / FG vs. CG Mix / AC Grade / Raw Materials / ABR / AC Content?
- **What can we change and hope to see an effect?**
  - Don’t forget about the Hamburg Wheel
- **Will reasonable adjustments be enough?**
  - Still need to collect information and “connect the dots”


Hamburg Wheel and Flexibility Index - N50 C
Wheel Deflection (mm)
0
-2.5
-5
-7.5
-10
-12.5
-15
0
2500
5000
7500
10000
12500
15000
Passes
N50C with 58-28
N50C with 64-22
N50C with 64-28
N50C with 70-22
FI=10.9
FI=16.4
FI=13.7
FI=8.4


Hamburg Wheel and Flexibility Index - N50 C
0.00
-2.50
-5.00
-7.50
-10.00
-12.50
-15.00
Wheel Deflection (mm)
0
2500
5000
7500
10000
12500
15000
Passes
N50C with 64-22
N50C with 64-22 and Plus 0.4% AC
FI=15.5
Plus 0.4% AC
FI=8.4


Hamburg Wheel and Flexibility Index - N50 C
0.00
-2.50
-5.00
-7.50
-10.00
-12.50
-15.00
Wheel Deflection (mm)
0
2500
5000
7500
10000
12500
15000
Passes
N50C with 64-22
N50C with 64-22 and Plus 0.4% AC
N50C with 64-22 and 3% Additive
FI=14.7 with Additive
FI=8.4
FI=15.5 Plus 0.4% AC

Next Steps / Lessons Learned

- **Can we do this in a QC Lab?**
  - *Yes but not required*
- **Where do our mixes stand now?**
  - *Aging protocol will change things (don't assume anything)*
  - *Start testing your mixes (IDOT / Consultants)*
  - *You need to know where you are*

Next Steps / Lessons Learned

- **Can we make an adjustment?**
  - *Possibly – How much is enough?*
  - *Need to look at materials*
  - *Need to look at modifiers*
  - **Need to look at field variability**
  - *How will Aging Protocol effect produced mix?*
  - *What to do when low values occur?*
  - **Currently looking at Lab Prepared Samples for Ideas**

Final Questions or Comments?