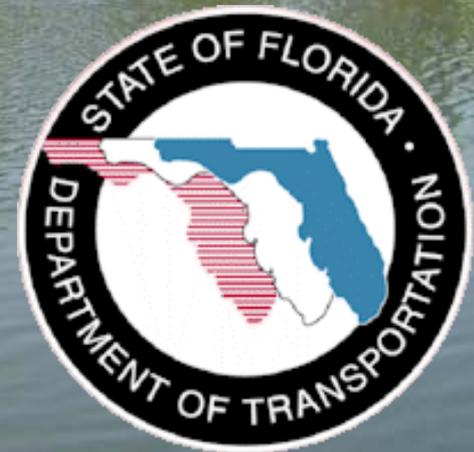


Development of Florida Texture Meter for Detection of Segregation



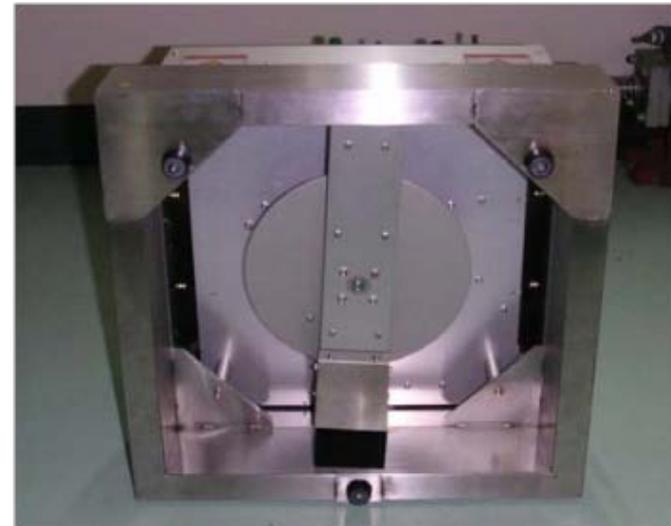
Segregation

- ◆ Occurs as a result of non-uniform distribution of coarse and fine aggregates
- ◆ Effect of segregation
 - ✓ High air void & low asphalt content
 - ✓ Cracking
 - ✓ Raveling
 - ✓ Stripping
 - ✓ Non-uniform texture (cosmetic)
- ◆ Can segregation be detected by surface texture?



CIRCULAR TRACK METER (CTM)

- ◆ ASTM E 2157 & ASTM E 1845
- ◆ Portable device
- ◆ Charge couple device laser mounted on a 11.2 inch rotating arm
- ◆ Texture obtained along a circular path
- ◆ Approximate cost: \$30,000



Florida Texture Meter (FTM)

- ◆ Built based on ASTM E 1845 and E 2157.
- ◆ LabVIEW programming software.
- ◆ USB output to connect with Laptop/PC/tablet.
- ◆ Operates on 120V AC line power or 24VDC battery power.
- ◆ Weighs approximately 30lbs with battery.
- ◆ Total cost approximately \$7,000



Field Evaluation

- ◆ Three Field Sections
 - ✓ SR 145 (Madison Co.), SR 26 (Alachua Co.), I-10 (Duval Co.)
 - ✓ Areas of high, low severity as well as no segregation identified visually.
 - ✓ CTM and FTM data collected.
 - ✓ Cores retrieved for Gmb.
 - ✓ Gmm obtained from construction reports.



Project Pictures

High Segregation



No Segregation



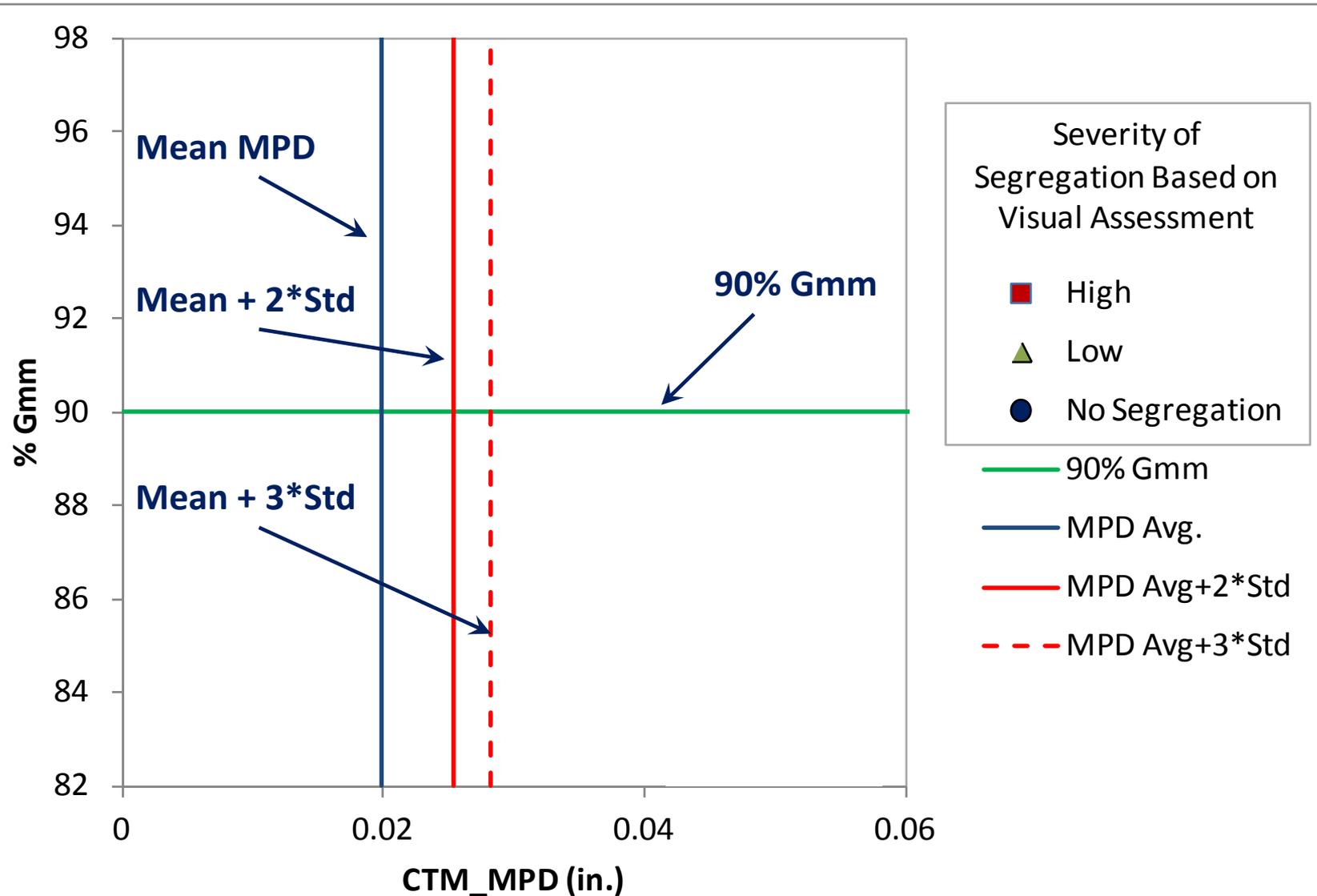
CTM and FTM Testing



Pavement Coring

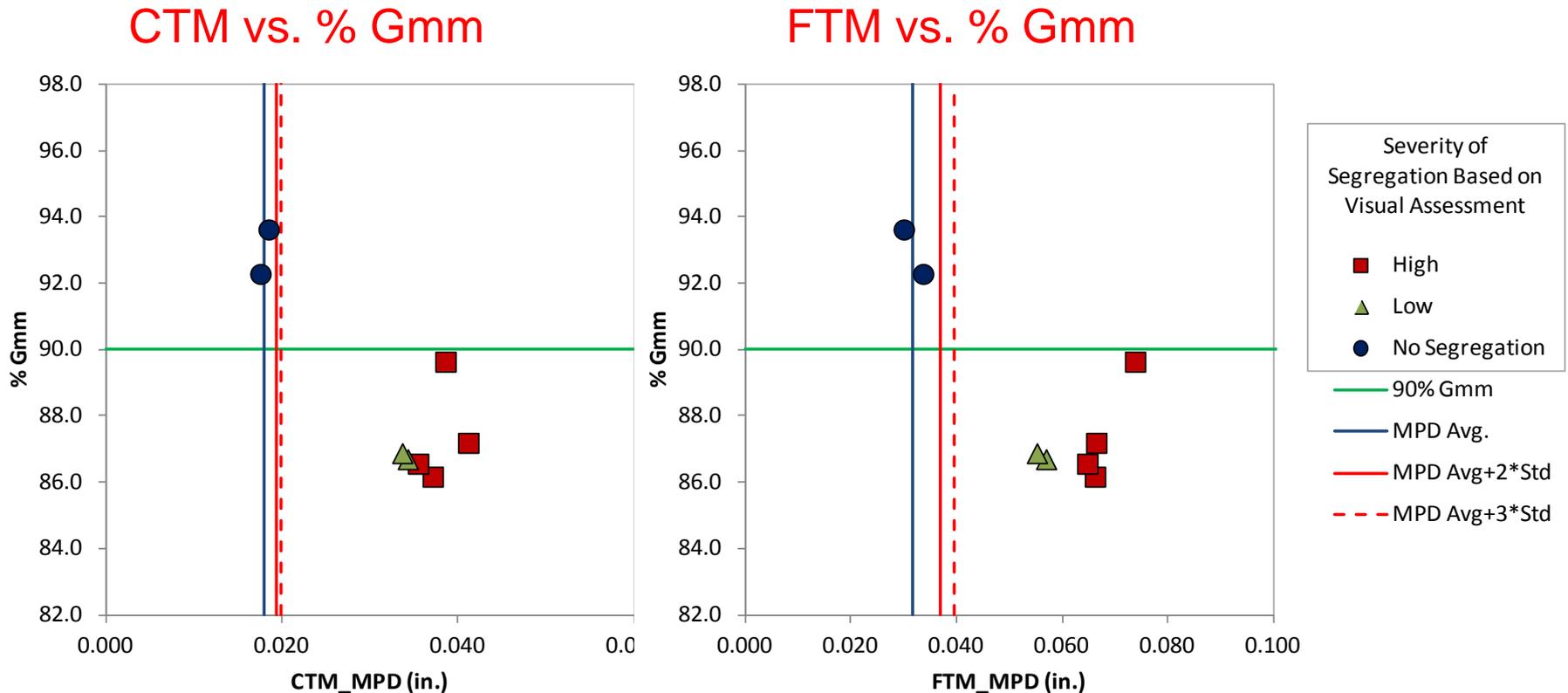


Understanding the Graph



Madison 35060, SR 145

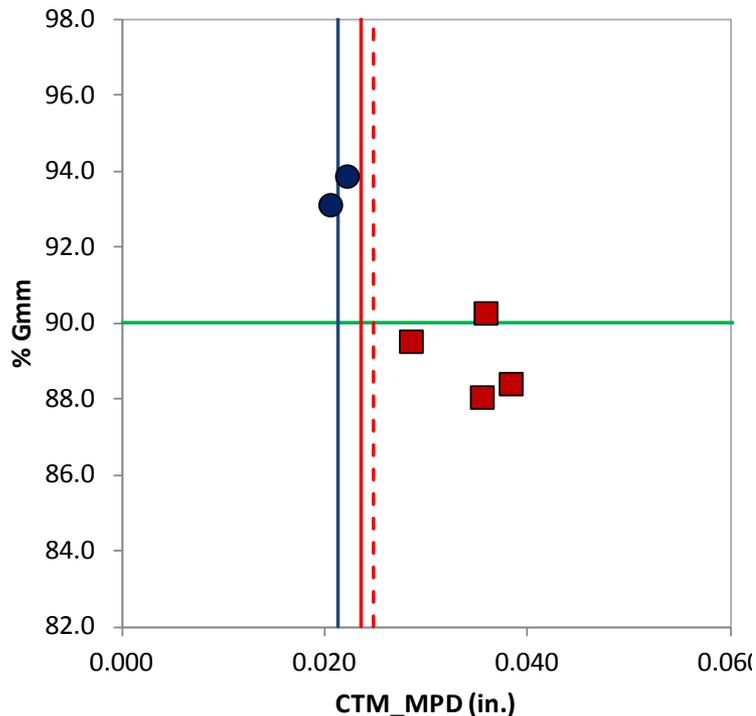
◆ No False Alarms & No Misses (Out of 6 Data Points)



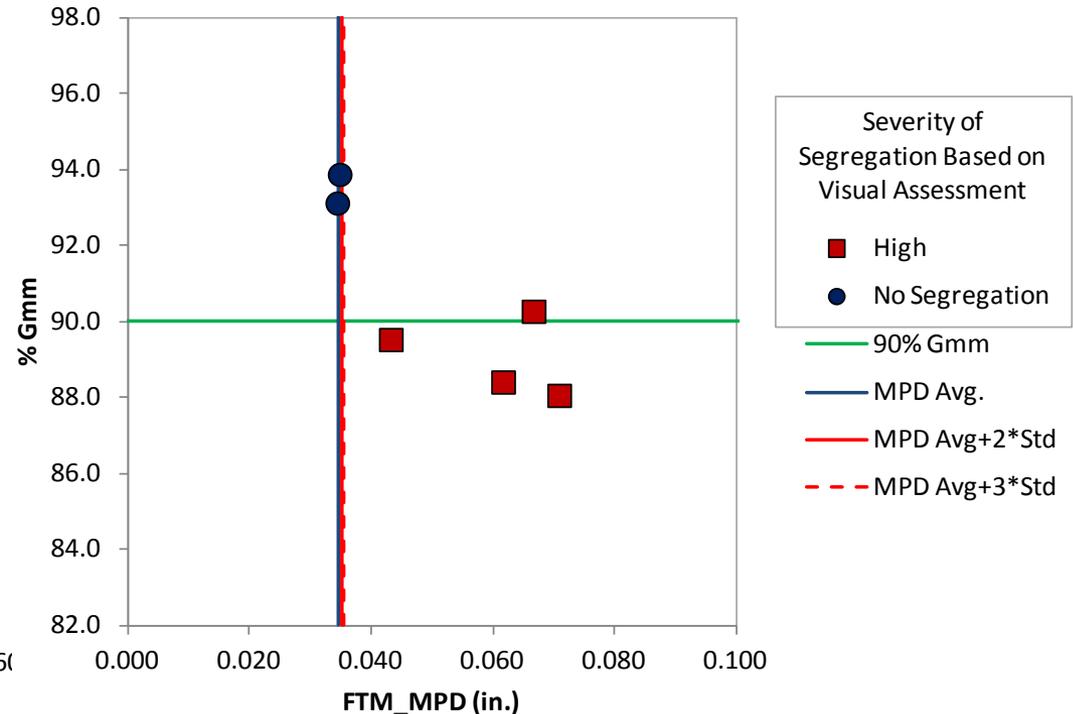
Alachua 26130, SR 26

- ◆ 1 False Alarm (Out of 4 Data Points)
- ◆ Sufficient Number of Control Data Points Important

CTM vs. % Gmm



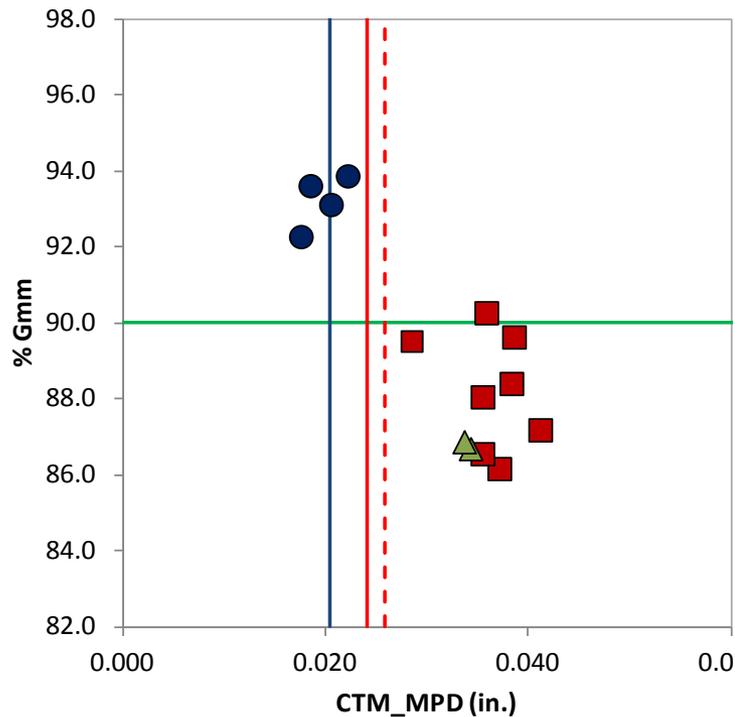
FTM vs. % Gmm



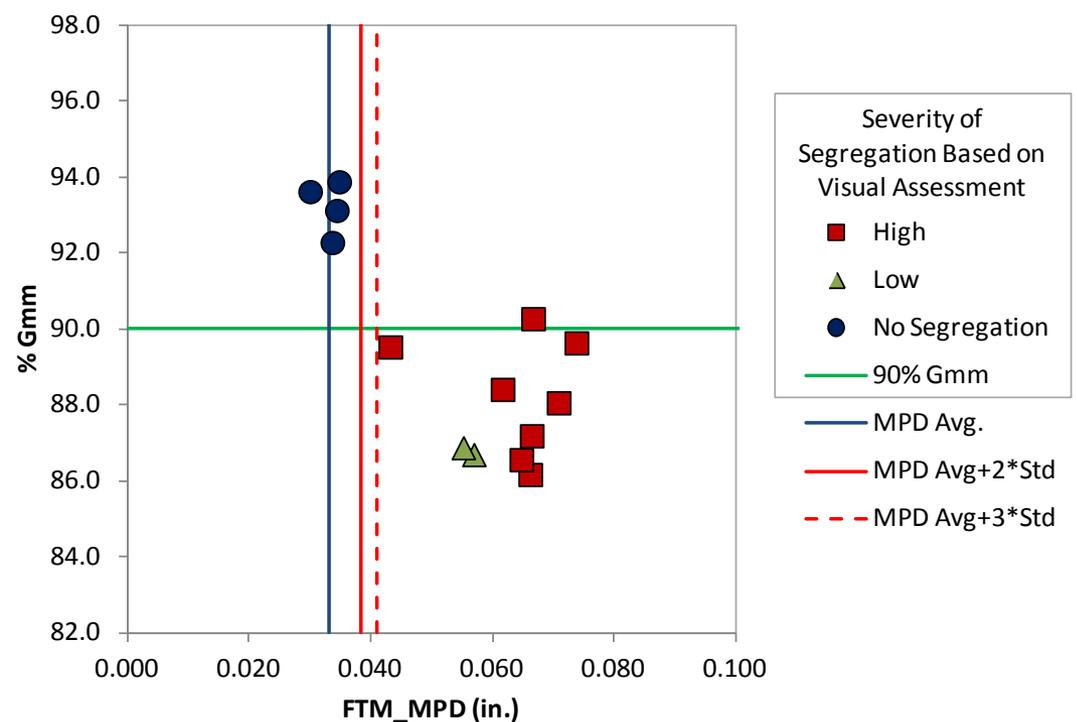
35060 & 26130 Combined

- ◆ Similar Texture Values from 35060 and 26130
- ◆ 1 False Alarm (Out of 10 Combined Data Points)

CTM vs. % Gmm



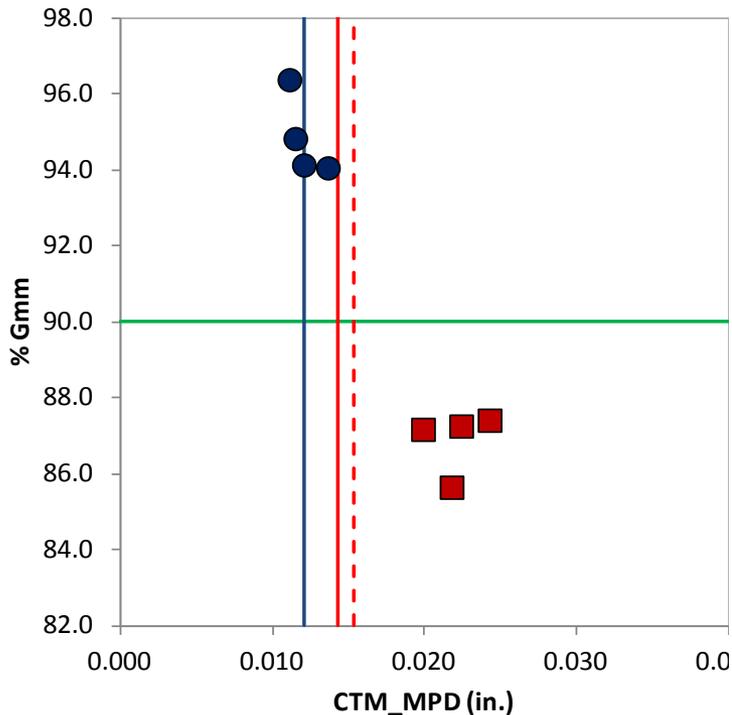
FTM vs. % Gmm



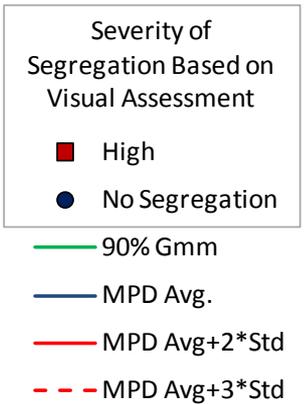
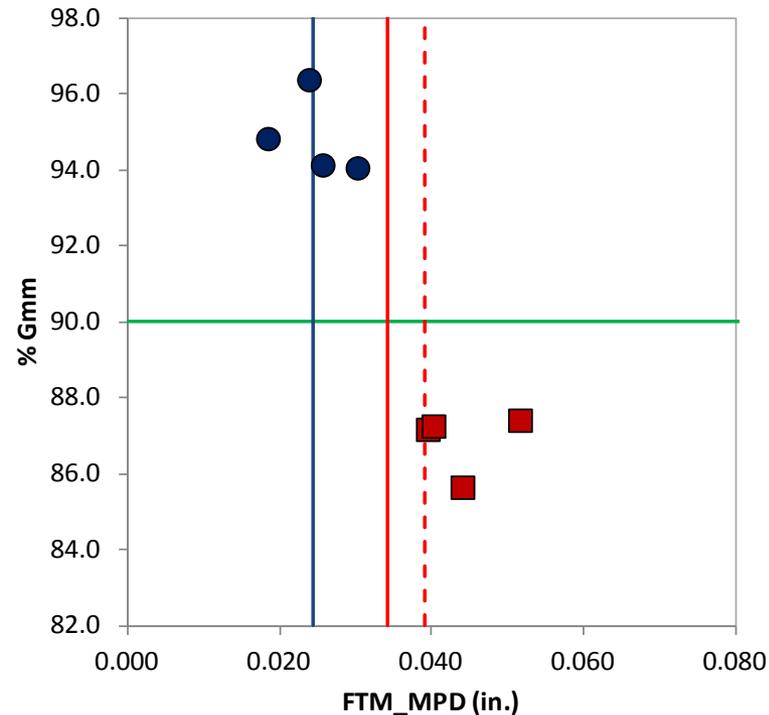
Duval 72070, I-10

◆ No False Alarms & No Misses

CTM vs. % Gmm



FTM vs. % Gmm



Summary

- ◆ FTM overestimates the texture when compared to CTM
- ◆ Statistical analysis indicates both FTM and CTM are capable of differentiating the texture between segregated and non-segregated areas
- ◆ Field data indicates that FTM & CTM has potential for identifying segregated areas



Future Plans

- ◆ Additional site selection / evaluation
- ◆ Open graded sections to be studied
- ◆ Evaluation of a walking texture meter



Questions?

