



Flexible Pavement Committee Meeting 2023

State of Pavement Construction

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FDOT, Office of Construction

Additional Asphalt

- July 2022 Workbook Changes
 - Base Elevation Checks
 - Base Cross Slope Requirement
 - Curb & Gutter Cross Slope Requirement
 - Asphalt Quantity Paid Up to 110% of Adjusted Plan Quantity
- FY 2023-24 Workbook Change
 - Made Spreadrate Tolerances Consistent with July 2022 Pay Quantity Tolerances



Tack Coverage

- Seeing Much Better Coverage with the New, Increased, & Simplified, Tack Rates
- Full Coverage Much More Common
- Please Ensure Full Coverage it is Vital to Pavement Performance





Milled Surface Cleanliness

- Best Tack Materials, Best Tack Spread Rate, & Best Tack Coverage Accomplish Little, if Milling Dust Remains
- Milling Dust = Poor Bond = Slippage
- Some Slippage Issues
 - Not Widespread, But Has Occurred



Minimizing Remove & Replace

- Especially with Current Challenges
 - Materials Supply, Trucking, etc.
- July 2022 Straightedge Specs
 - Allow More Non-R&R Correction Methods
- For Smoothness Issues (RN & IRI)
 - Have District Pavement Materials Staff Ride Project
- Consider Leave in Place Option

Minimizing Remove & Replace

- However, Will Still Be Some R&R
- Typically, for Issues Detrimental to Pavement Performance/Life
 - Poor Ride/Smoothness
 - Segregation & Other Surface Issues
 - Significant Materials Failures
 - etc.



No Pay?

- If Material is Outside Acceptance Criteria, But Expected to Perform Well or Reasonably Well
 - We Derive Value From It, Some Level of Pay is Appropriate
- If Material So Bad, Not Expected to Last Long (i.e. Worthless)
 - Why Is It Being Left in Place?
- Key Factors in Determining Pay Reduction
 - Proximity to Acceptance Criteria (Target +/- Tolerance)
 - Anticipated Pavement Performance/Life
 - Likelihood of Premature Performance Issue/Failure

Pavement Smoothness

- LA & Non-LA IRI Smoothness Specs
 - Incentivizing Paving Smoother &
 - Disincentivizing Paving Rougher
- Overall, Still Paving Very Smooth
- Keep Up the Outstanding Work!
- Pilot Non-LA Smoothness Specs
 - 3 Projects Completed So Far
 - All Achieved Incentives



2021 – Limited Access IRI Project Overview

- 9 Projects
 - Lowest Average Project IRI = 25
 - Highest Average Project IRI = 55
 - (Average) Average Project IRI = 42
- 6 Projects Received Incentive
 - Average Incentive/Disincentive = \$793 per lane mile
 - Highest Incentive = \$2,515 per lane mile
 - Greatest Disincentive = -\$674 per lane mile
- 2 Project Received 3% Consistency Bonus
 - All LOTs $\leq$ 55 in/mile

2022 – Limited Access IRI Project Overview

- 18 Projects
 - Lowest Average Project IRI = 31
 - Highest Average Project IRI = 66
 - (Average) Average Project IRI = 43
- 14 Projects Received Incentive
 - Average Incentive/Disincentive = \$575 per lane mile
 - Highest Incentive = \$2,187 per lane mile
 - Greatest Disincentive = -\$2,344 per lane mile
- No Project Received 3% Consistency Bonus
 - All LOTs $\leq$ 55

Non-Limited Access IRI Smoothness Pilot Projects

- 30 Projects Planned Statewide
- 5 Smoothness Classes
 - Appropriate IRI Values, Incentives & Disincentives
- 4 Projects Completed So Far
 - Average Incentive/Disincentive = \$1,711 per lane mile

Non-Limited Access IRI Smoothness Pilot Projects Tested

Smoothness Class	FIN	District	SR	Paving Contractor	Avg Project IRI	Min Lot IRI	Max Lot IRI	Total Lot-by-Lot Incentive	Total Lane Miles Tested	Avg Incentive per Lane Mile
2	43775815201	3	369	C.W. Roberts Contracting	35	30	58	\$4,407	3.24	\$1,359
3	44290615201	5	400	P & S Paving	38	26	54	\$11,614	6.23	\$1,864
3	44381515201	5	40	Halifax Paving	38	24	66	\$45,970	24.50	\$1,877
4	44609715201	4	710	J. W. Cheatham	59	44	85	\$4,823	5.08	\$950

New QCRR on Forms Office Website

- Handles Projects with 105% & 110% Pay Quantity Maximum
 - “Letting Date” Entry in “Project Information” Window, Determines 105% vs 110%
 - 110% - July 1, 2022 & After
 - 105% - Before July 1. 2022
 - New QCRR Requires “Letting Date” to Access “Pay Quantities” Sheet
 - Older versions limit pay Adjustments to
 - Lowest value for project type
 - ENTER THE LETTING DATE

The screenshot displays a Microsoft Excel spreadsheet with a 'Project Information' dialog box open. The dialog box contains the following fields:

- Contractor: Ajax Paving of Florida
- Project Number (FIN): 444484-1-52-01
- FDOT Contract Number: E1U28
- Bid Date (Letting Date): 5/2/2022 (This field is circled in blue)
- Is this a Design Build or Lump Sum Project? Yes (selected)

The background spreadsheet shows a table with columns for Date Paved, Day or Night, Crew ID, Sub Lot, Truck Load #s, Intended Use, and various measurements and quantities. The table is titled 'Report of Quality Control' and includes a 'DAILY TOTALS' row.

#	Date Paved	Day or Night	Crew ID	Sub Lot	Truck Load #s	Intended Use	Length (FT)	Width (FT)	Area Paved (SY)	Quantity (TN)				
1	5/5/2022	Day	1	1	1-3	SP TL-D	818	12.00	1090.67	53.42				
	5/5/2022	Day	1	1	3-8	SP TL-D 76-22	999	12.50	1387.50	156.85				
	5/5/2022	Day	1	1	9-14	SP TL-D 76-22	993	12.50	1379.17	155.79				
	5/5/2022	Day	1	1	14	Waste	30	12.50	41.67	2.00				
DAILY TOTALS:							368.06	Total Tons	2.00	Tons Not in Lot	366.06	Net Lot Tons	(312.64 tons Require Density)	53.42 tons Non-Density
2	5/6/2022	Day	1	1	1	SP TL-D 76-22	1,320+70	1,320+85	15	9.00	15.00	1.38		
3	5/6/2022	Day	1	1	1	SP TL-D 76-22	1,320+85	1,320+95	10	40.00	44.44	4.09		
4	5/6/2022	Day	1	1	1	SP TL-D 76-22	1,320+95	1,321+06	11	40.00	48.89	4.50		
5	5/6/2022	Day	1	1	1	SP TL-D 76-22	1,321+06	1,321+29	23	9.00	23.00	2.12		
6	5/6/2022	Day	1	1	1	SP TL-D 76-22	1,360+97	1,361+23	26	12.00	34.67	3.20		

QCRR Training

- Starting to Provide QCRR Training Around the State
 - Tried initial test run in D3 with a larger class Tuesday in D6
- For CEI's, FDOT, & Contractors
- Will offer more classes around the State
- Next Class will likely be at Turnpike Turkey Lake Office

QCRR Training

- Primarily for PA's PM's, & CSS's
- Importing QCRR file into a Blank QCRR form
- Exporting QCRR data to a separate Spreadsheet
- Review Pay Quantity Sheet (and the Pay Quantity Adjustments)
- Review some of the many Automated Reports available within the QCRR
 - Project Tons by date and Intended Use/Pay Item
 - Tons by Mix Design, Tons by Date

New VT Roadway Report (VTRR)

- Piloting New Version of VTRR in D2 - Same Format as QCRR
- One Excel File for Entire Project –
 - Existing VT Form Requires at least One File/Day

top		Remove Row at selection	Add Row at selection	Copy Last Row	State of Florida Department of Transportation Asphalt Roadway - Verification Report															Update Workbook		Clear EVERYTHING		675-030-21A CONSTRUCTION 11/13/2022		
		Project ID (FIN & Contract #): 443420-1-52-01 (T2838)			☐ Lot Closed			Intended Lot Size			LOT # 1			Mix Design # SPM22-21541A			Reload		Clear Data		View Pay Quantity Sheet		Import from file		Email Form Feedback to: D-AsphaltForms@dot.state.fl.us	
		Contractor: Preferred Materials			4000 tons			☒ Static Only			Gmm: 2.460			Pay Item # Import		remove last lot		Show Reports		Assign Pay Item #'s						
#	Date Paved	Day or Night	Crew ID	Sub Lot	Truck Load #s	Intended Use	Density ?	MTV Used	Lane	Desc.	Lift # of #	Start Paving at Station	End Paving at Station	Length (FT)	Width (FT)	Area Paved (SY)	Quantity (TN)	Individual Lift Thickness (in)	Actual Spread Rate (LB/SY)	Target Spread Rate (LB/SY)	Total Thickness (in)	Prorated Base (SY)	BASE ONLY			
	10/20/2022	Night	1	1	1-5	SP TL-E 76-22	Y	Y	L2	SR-105	1	1	338+25	334+75	350	14.46	562.50	93.59	3.00	332.76	320			v		
	10/20/2022	Night	1	1	5-15	SP TL-E 76-22	Y	Y	L2	SR-105	1	1	334+75	329+00	575	16.88	1078.68	174.91	3.00	324.30	320			v		
1	10/20/2022	Night	1	1	15/26	SP TL-E 76-22	Y	Y	L2	SR-105	1	1	329+00	321+80	720	16.39	1311.20	217.13	3.00	331.19	320			c		
	10/20/2022	Night	1			Waste											0.00									
→ 10/20/2022 TIN: C24275364-000 DAILY TOTALS: 485.63 Total Tons 0.00 Tons Not in Lot 485.63 Net Lot Tons (485.63 tons Require Density 0.00 tons Non-Density)																										
	10/23/2022	Night	1	1	1-5	SP TL-E 76-22	Y	Y	R2	SR-105	1	1	321+80	325+75	395	12.25	537.50	89.32	3.00	332.35	320			v		
	10/23/2022	Night	1	1	5-23	SP TL-E 76-22	Y	Y	R2	SR-105	1	1	325+75	337+20	1145	15.80	2010.11	337.88	3.00	336.18	320			c		
2	10/23/2022	Night	1	1	23/26	SP TL-E 76-22	N	Y	R3	SR-105	1	1	333+60	335+35	175	16.50	320.83	54.51	3.00	339.81	320			c		
	10/23/2022	Night	1			Waste											4.00									
→ 10/23/2022 TIN: C24275364-000 DAILY TOTALS: 485.71 Total Tons 4.00 Tons Not in Lot 481.71 Net Lot Tons (427.20 tons Require Density 54.51 tons Non-Density)																										
	10/24/2022	Night	1	1	1-2	SP TL-E 76-22	Y	Y	L1	SR-105	1	1	338+25	336+85	140	13.25	206.11	32.66	3.00	316.92	320			c		
3	10/24/2022	Night	1	2	2-9	SP TL-E 76-22	Y	Y	L1	SR-105	1	1	336+85	331+35	550	13.25	809.72	128.84	3.00	318.23	320			c		
→ 10/24/2022 TIN: C24275364-000 DAILY TOTALS: 161.50 Total Tons 0.00 Tons Not in Lot 161.50 Net Lot Tons (161.50 tons Require Density 0.00 tons Non-Density)																										
	10/26/2022	Night	1	2	1-8	SP TL-E 76-22	Y	Y	R1	SR-105	1	1	321+80	327+80	600	12.50	833.33	139.56	3.00	334.95	320			c		
→ 10/26/2022 TIN: C24275364-000 DAILY TOTALS: 139.56 Total Tons 0.00 Tons Not in Lot 139.56 Net Lot Tons (139.56 tons Require Density 0.00 tons Non-Density)																										

New Ideas, Methods, & Technologies



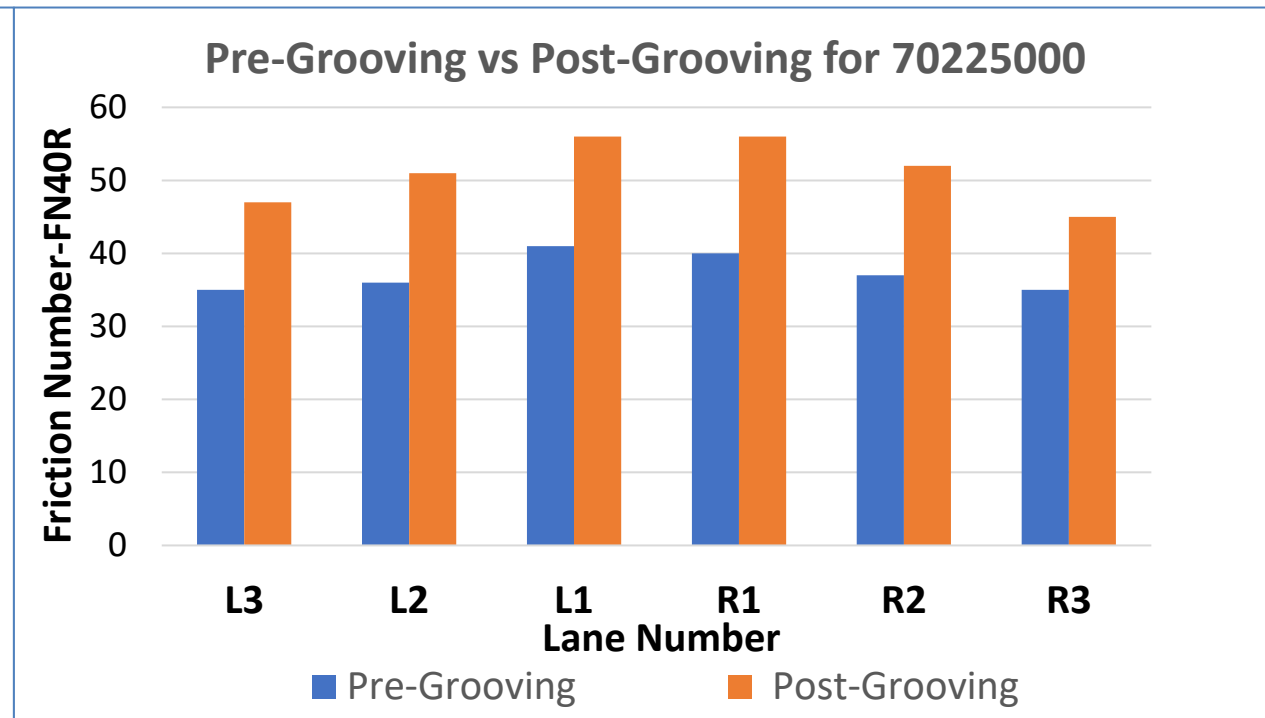
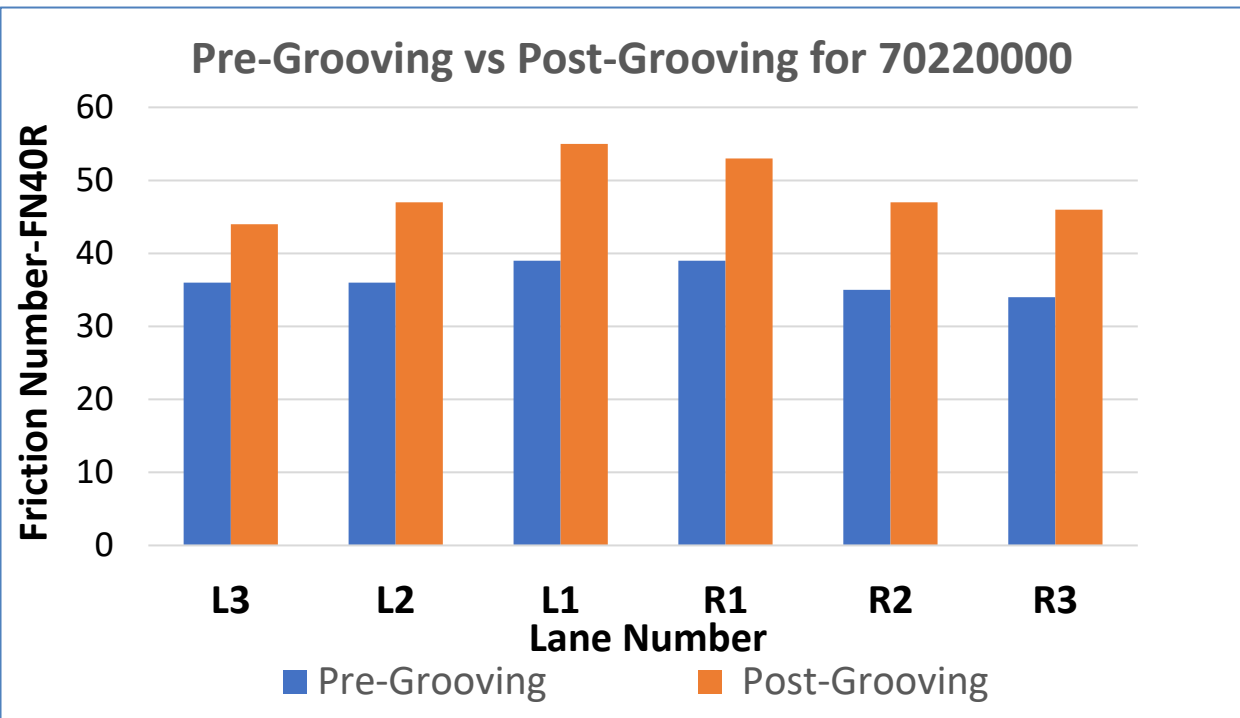
Longitudinal Grooving

- Improves Friction & Reduces Hydroplaning
 - 35% Increase in Friction Numbers on I-95 Concrete Grooving Project
- Reduces Wet Weather Crashes
- Target Zero



Longitudinal Grooving - Pavement Friction Improvement

- Pre-Grooving Friction Numbers Mostly 30's
- Post-Grooving Friction Numbers Now 40's & 50's!
- 35% Increase in Friction

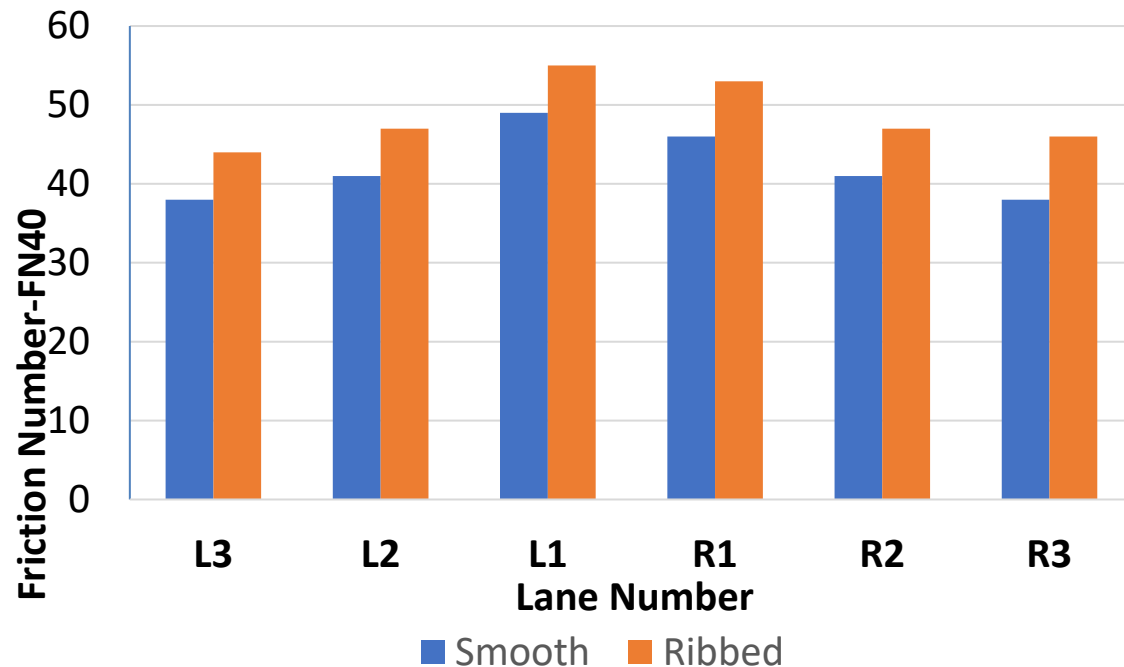


Longitudinal Grooving

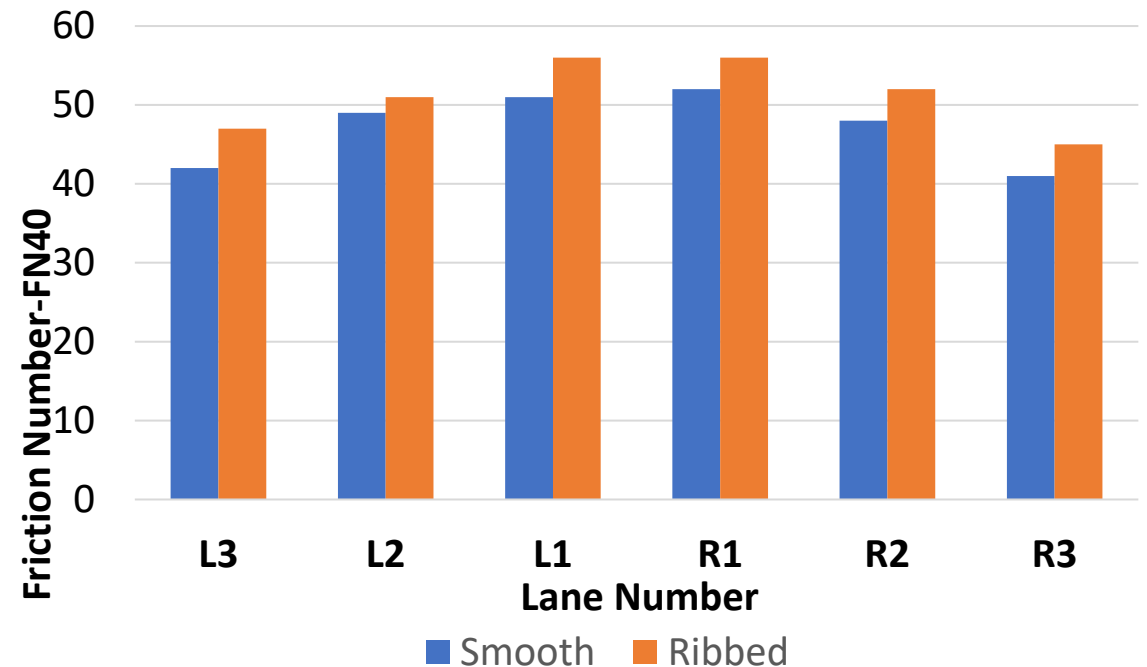
- Ribbed Tire vs Smooth Tire Friction

- Similar Results (Ribbed Tire vs Smooth Tire Friction)
 - Indicates Good Macro Texture & Hydroplaning Resistance

Ribbed Tire vs Smooth Tire for 70220000

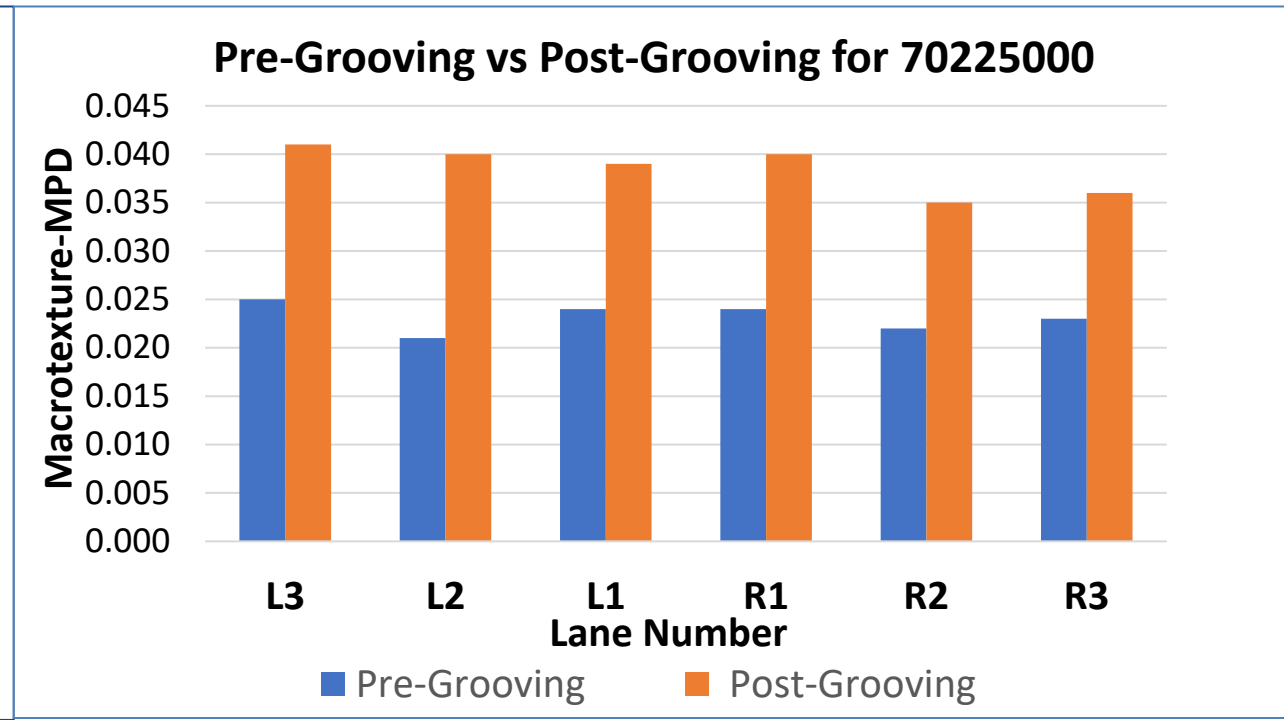
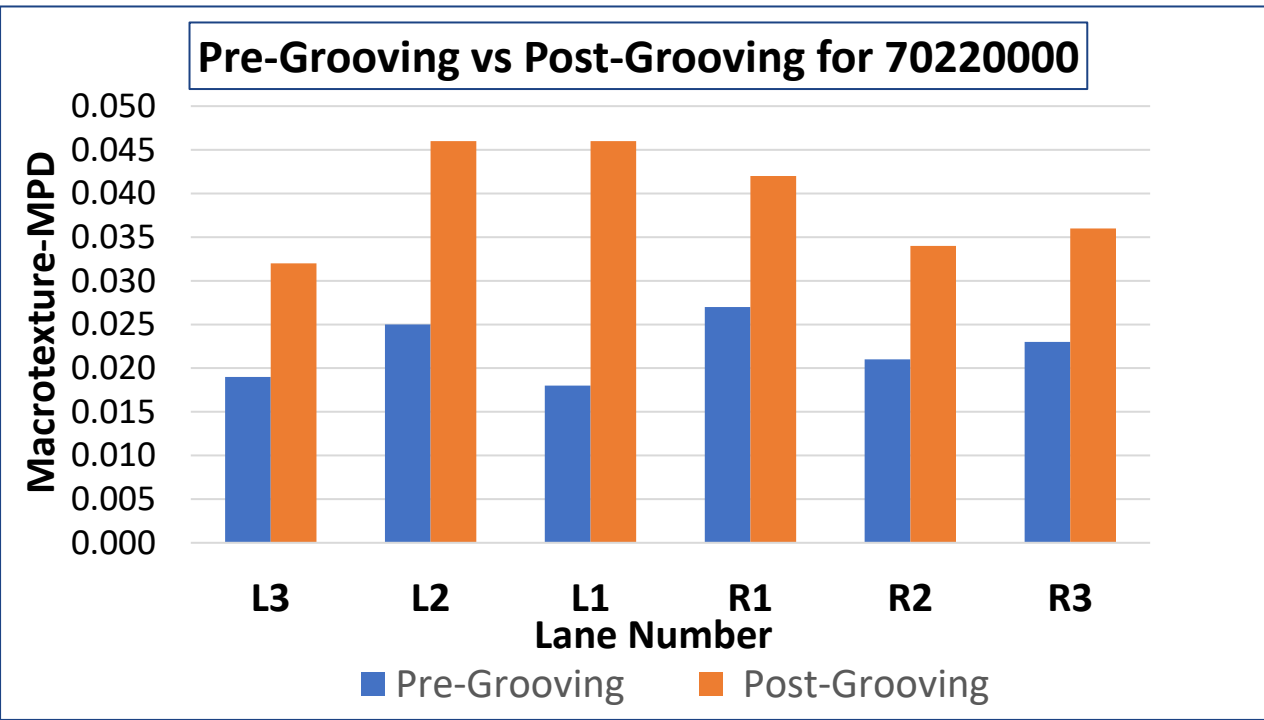


Ribbed Tire vs Smooth Tire for 70225000



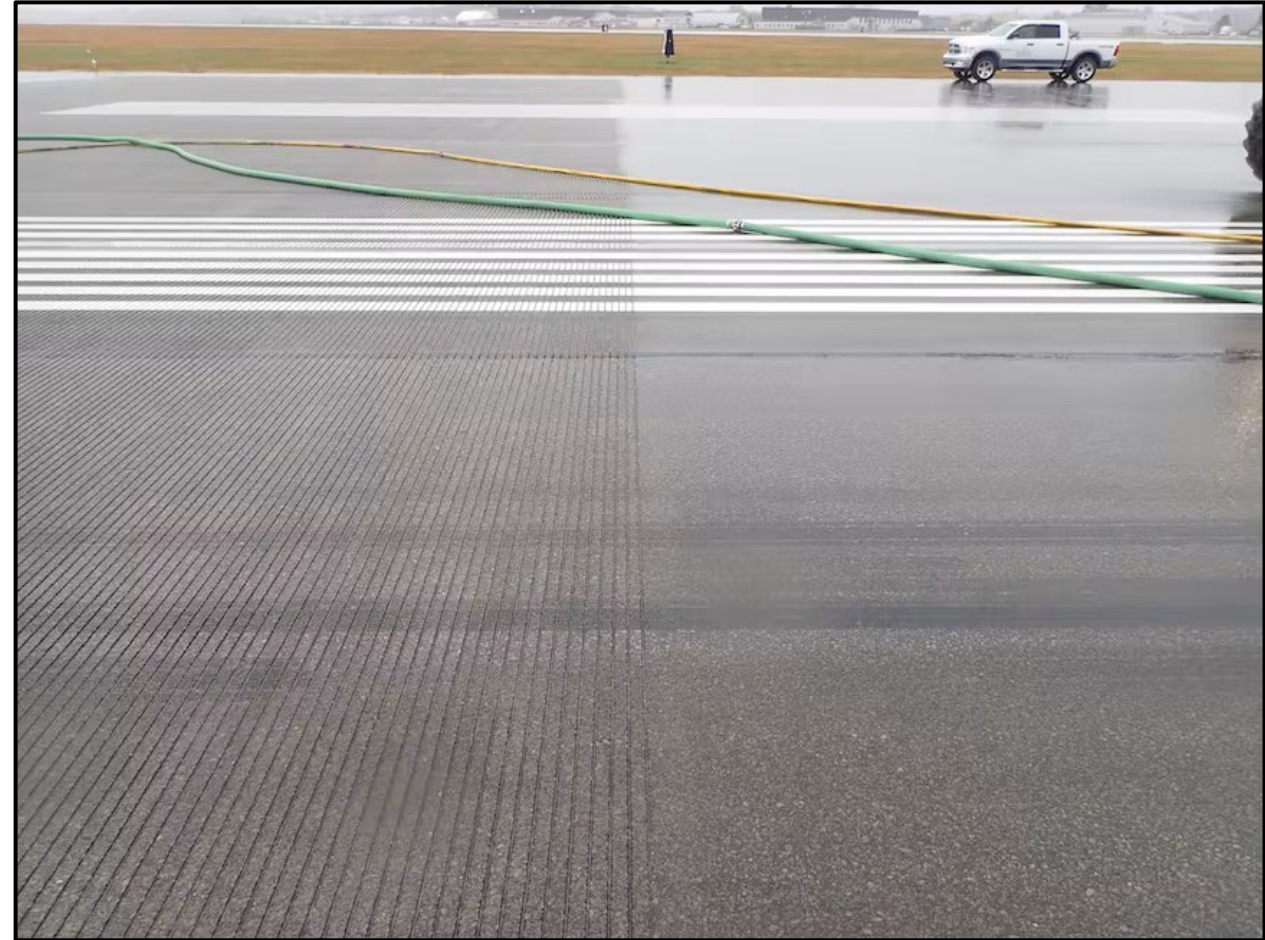
Longitudinal Grooving - Macrotexture

- Longitudinal Grooving Significantly Increased Macrotexture
 - Almost Doubled In Most Cases
- Indicates Good Hydroplaning Resistance



Longitudinal Grooving

- Traditionally Used on Concrete Pavement
- Other States Have Longitudinally Grooved Asphalt
 - Missouri, NY, Ohio
 - Reduced Crash Rates
 - Especially Wet Weather Crashes
- Florida???
 - Transverse Grooving on Florida Airport Runways & Taxiways
 - Photo of Orlando International Airport Runway



Longitudinal Grooving of Asphalt

- Possible Uses

- Groove Dense-Graded Asphalt to Reduce High Wet Weather Crash Rates
 - Increase Friction & Hydroplaning Resistance
- Potential Option Instead of FC-5?
 - FC-5 Life About 5 to 7 Years Less Than Dense-Graded FC
 - Pave Dense-Graded FC & Groove Longitudinally
 - Use on Projects Where FC-5 Ravels/Likely to Ravel Prior to End of Design Life
 - We've had FC-5 projects ravel within a year after construction (Krome Ave)
- Longitudinal Grooving Dense-Graded FC Could Provide Hydroplaning Reduction Without Loss of Pavement Life Seen with OGFC
 - With OGFC We Trade Durability to Gain Permeability, but do we need to?

Paving-Related Technologies

- Keep Evaluating Technologies That Improve Asphalt Pavement Quality
- “Use For Good, Not Evil”
 - Reduce Coring & EAR/Delineation Testing
 - Reduce/Eliminate Removal & Replacement
 - Roller Coverage Mapping
 - Continuous Mix Temperature at Auger
 - Thermal Profiling of Mat Immediately After Paving
 - Mat Temperature During Compaction
 - More Exact Material Placement Locations
 - Partially/Fully Automated Construction Data Collection – Cross Slopes, Spread Rates, etc.

OnStation

- Construction Inspection & Location Application
- Upload Design Files
- Using Phone's GPS & Design File info, app places you on the alignment and Aerials
- Provides Real-Time Location Info
 - Station & Offset, Mile Post, GPS



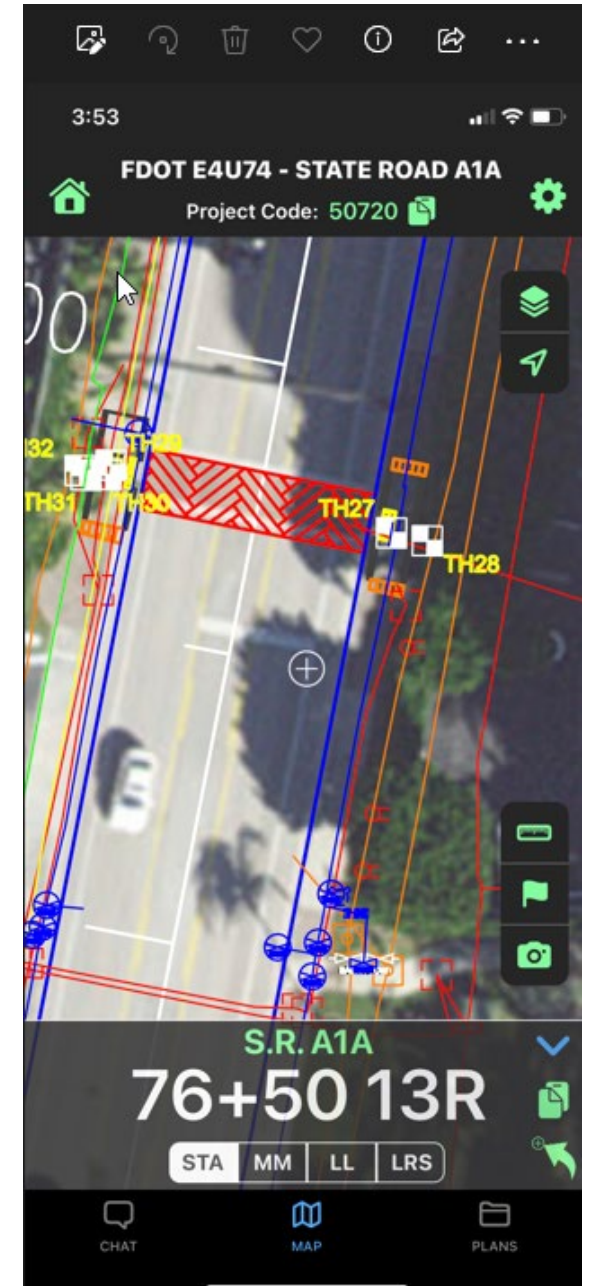
OnStation

- Add Photos - Location, Date, & Time Stamped



OnStation

- View Design Features on the Aerials
- View Plan Sheets



OnStation - Paving Forms

- I suggested they create Paving Forms
 - like Cross Slope & Straightedge
- Cross Slope Form Created
 - Piloting in D2 with Anderson Columbia
- Meet next week to work on Straightedge Form
 - Also Suggested Automated Upload to MAC

The screenshot shows the OnStation mobile app interface for a project titled "Cross Slope 01". At the top, there is a status bar with the time 4:25 and various icons. Below the title, there are two buttons: "Route" (blue) and "Delete" (red). A navigation bar contains five icons: "Chat", "Details", "Share", "Tags", and "Forms" (highlighted in green). The main content area is divided into sections: "Measurements" with tabs for "EXISTING", "MILLING" (selected), and "PAVING"; "Roadway" with fields for "Cross Slope Design", "Cross Slope Measured", and "Individual Deviation"; and "Shoulder" with fields for "Cross Slope Design", "Cross Slope Measured", and "Individual Deviation".

Paving Info from Paving Equipment

- Future Plans of Collecting Data from Miller, Paver, Rollers to provide cross slopes, spread rates
- Automate QC Inspection & Data Collection
- Provide QC & VT Real-Time Info During the Milling, Paving, & Compaction Operations
- Started Discussing with Roger Croft of Dobbs Equipment & Some Contractors

Thank You!!!

- Anderson Columbia, Ajax Paving, CWR, Halley Engineering Contractors, General Asphalt for providing Asphalt Plant & Lab Tours for FDOT's Construction Academy & District Construction Offices
- Contractors & ACAF Spec Committee for Specification Discussions, Suggestions, & Working to Improve Construction Specifications
 - 110% Pay Quantity Max
 - Simplified Tack Rates
 - Additional Non-Remove & Replace Straightedge Correction Methods



Questions?

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