PaveScan RDM 2.0 GPR, Dielectric Principles

- PaveScan 2.0 GPR Overview

- How PaveScan is used as a Quality Control Tool

- Looking for Uniformity

- GPR Project data overview

- Why PaveScan GPR Testing?

PaveScan RDM 2.0 Overview

- Collects surface dielectric value

- Dielectric values indicate uniformity

- Cores can be taken to calibrate with compaction (Pucks can be used instead)

- An option to collect data viewing void content percentage instead of dielectric based on the calibrations

2020 NDDOT Highway 8

Achieving Quality with PaveScan

Used immediately after compaction, on-site full data shows the potential of possible low-density patterns to be evaluated on-site

- Roller pattern issue
- Paver issue
- Asphalt transportation issue

Having a continuous full coverage information, this can have a direct affect regarding pay factors
Increase chances for incentive payments

- Decrease penalties
- Provide information to improve procedures for both the DOT and contractors

Using PaveScan, RDM 2.0 as a PAQC

Produces Data in Real-Time

- Provides on-site dielectric values of newly laid and compacted asphalt

- Continuous Full Coverage (CFC)

- Provides a full-lane compaction contour map

- Core results calibrate Dielectric to:

    - Compaction percentage

    - Void content percentage

    - Density

Real-Time Data allows Improvements for Quality

- Dielectric Values for uniformity

- Identifying Areas of Low Dielectric
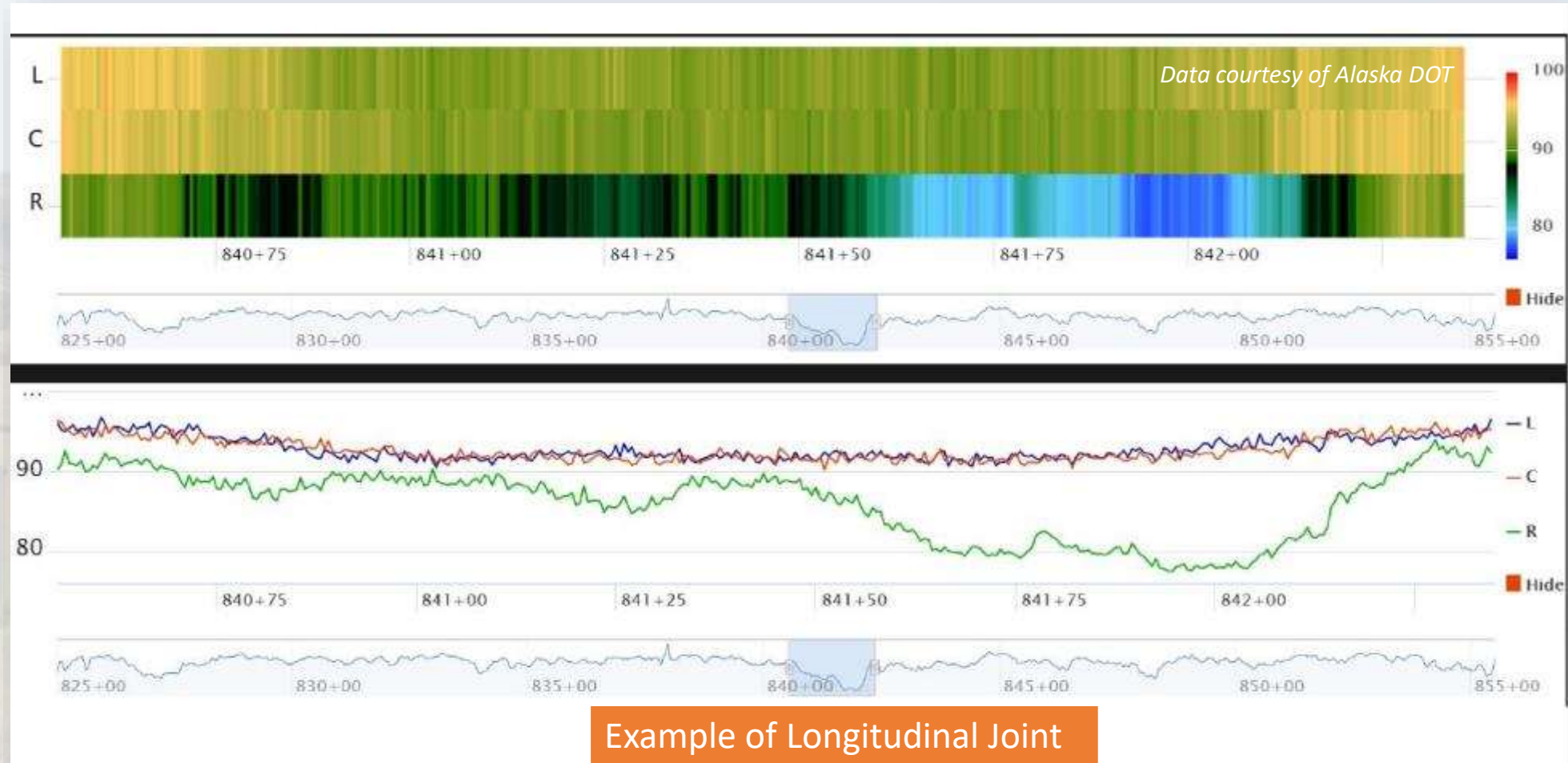
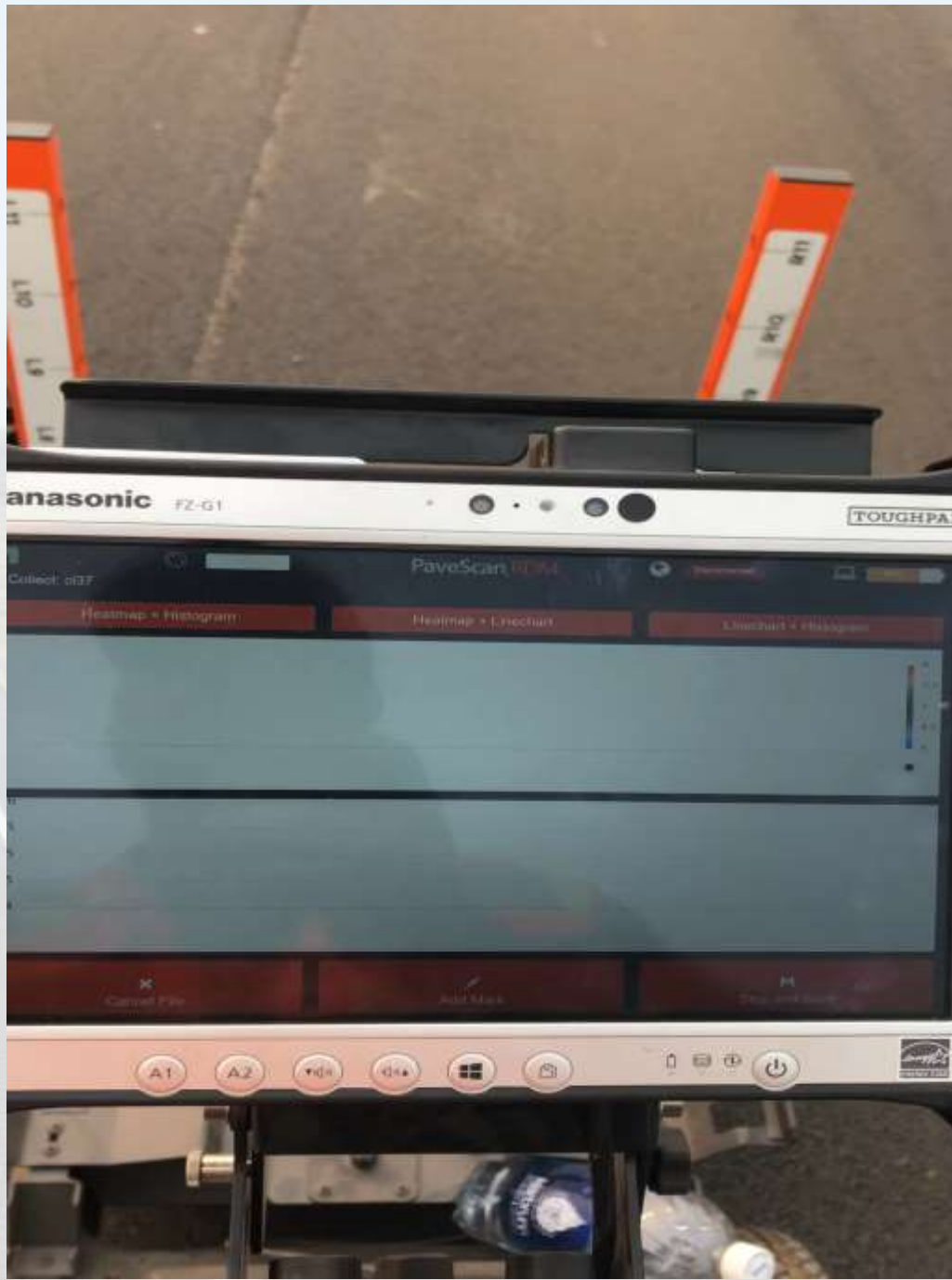- Core Calibrations

PaveScan, RDM 2.0 Data

Data courtesy of Alaska DOT

Example of Low Compaction Area

PaveScan, RDM 2.0 Data

Data courtesy of Alaska DOT

Example of Longitudinal Joint

PaveScan Longitudinal Joint Data

Lot #	Joint Density Data Average Dielectric Collected at Core Locations for Lot	Average Core Density For Lot
2	4.4	90.6
3	4.46	91.5
5	4.33	89.4
7	4.37	90.5
8	4.41	91.6
9	4.45	91.2
11	4.45	91.6
13	4.46	91.6
18	4.62	93.7

PaveScan HMA Mat Data

Lot #	Mat Density Data Average Dielectric Collected at Core Locations for Lot	Average Core Density For Lot	Average Median Dielectric from RDM (Swerve Method on Mat)		
1	4.63	93.4	4.67		
2	4.56	93.5	4.64		
3	4.43	93.5	4.52		
4	4.54	93.6	4.65		
5	4.44	92.5	4.51		
6	4.52	93.6	4.58		
7	4.47	92.7	4.55		
8	4.48	93.2	4.59		
9	4.44	92.7	4.53		
10	4.59	94	4.68		
11	4.52	93.3	4.63		
12	4.56	93.8	4.65		
13	4.42	93.7	4.58		
14	4.56	93.3	4.61		
15	4.73	95.2	N/A		
18	4.59	94.1	4.65		

Why PaveScan GPR Testing?

Proactive Procedure

No Physical Damage to Asphalt Section

Accurate Representation of Entire Asphalt Section

Elimination of guessing on if quality is being achieved

Modification made to benefit entire Asphalt Section

Questions?

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