Questions and Answers from Tech Tuesday Webinar on *Non-Destructive Test Methods Used in Concrete Pavement Construction*

August 12, 2026

Q1 - Is there a way to do in-situ resistivity? (Industry, IL)

Response:

Yes, in-situ resistivity measurements are possible. However, the values won't match those obtained from a cylinder cast from the same concrete mixture. This is due to two main reasons: 1) cylinders are tested in an SSD (saturated surface-dry) condition, whereas a slab typically is not, and 2) the boundary conditions differ between a slab and a cylinder.

In-situ measurements are typically taken in a grid pattern, and this data can be used to generate contour maps of resistivity. These maps help identify areas of better versus poorer quality. That said, the actual magnitude of the readings isn't particularly meaningful on its own, since the slab's moisture content is variable and not in an SSD condition.

Q2 - Can this be done on in-service PCC? Due to limiting testing (not every load), and early in situ distress, this could help with making decisions regarding replacement vs sealing, vs etc. – referring to resistivity? (Industry, NM)

Response:

Please see response above. The measurements were used to identify good and not so good areas.

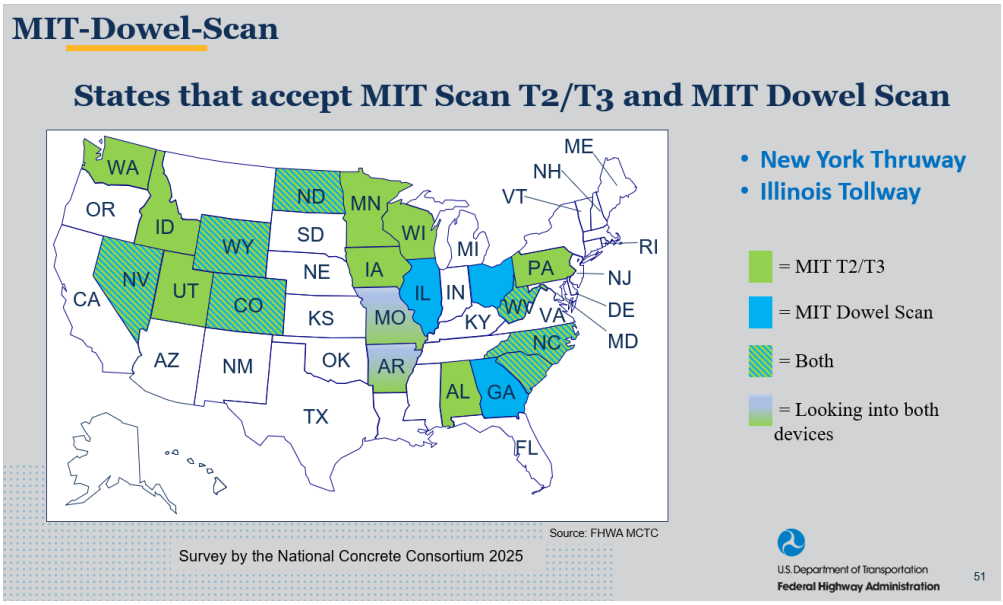
Q3 - Any of the thickness measurement technologies being adopted by any states? (agency, MI)

Response:

Please see the map below (which we didn't have time to include during the presentation) based on a recent NCC (National Concrete Consortium) survey of the use by states of MIT Scan T2/T3, and MIT Dowel Scan.

Other pavement thickness measurement technologies include GPR, pre/post-construction surveys, and Ultrasonic Pulse Echo (MIRA). The advantage of GPR and MIRA is that they don't require anything to be placed before construction. That said, the MIT Scan T2/T3 remains considerably simpler and easier to use compared to these alternatives. Some states do use surveys as their method for measuring pavement thickness.

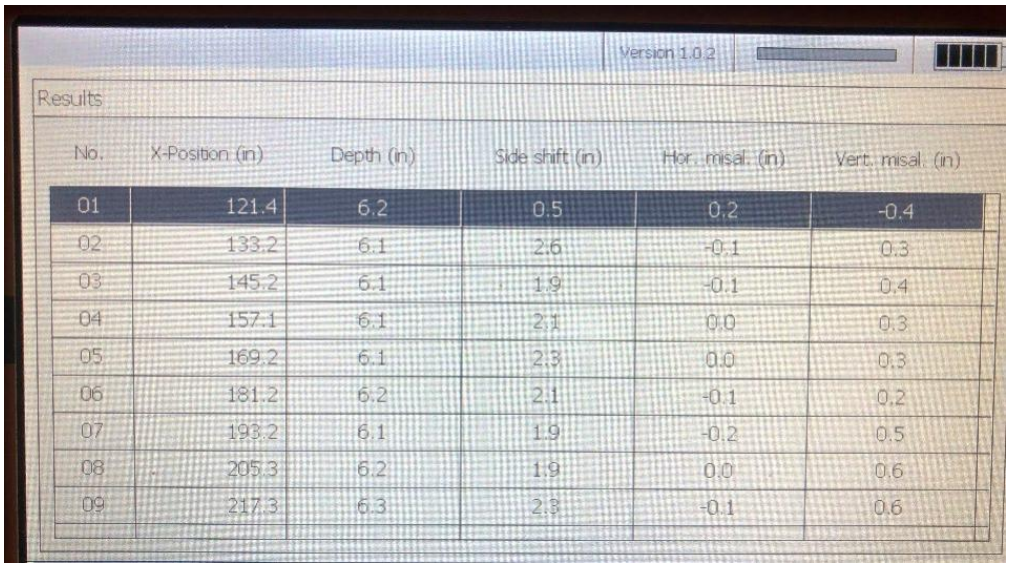
Impact Echo is another technology that could potentially be used to measure pavement thickness; however, it's not currently used by any states for acceptance purposes due to its limitations (requires a concrete base that is distinctive in its characteristics to the concrete, labor intensive).



Q4 - Can you provide a sample of how MIT scan data will look like? (Agency, PA)

Response:

Please see a screenshot of the onboard data screen below. Additional examples are shown on the equipment vendor's website: https://www.kesslerdcp.com/shop/concrete-pavements/mit-dowelscan-dowel-bar-scanner/?v=121172c4d136.



No.	X-Position (in)	Depth (in)	Side shift (in)	Hor. misal. (in)	Vert. misal. (in)
01	121.4	6.2	0.5	0.2	-0.4
02	133.2	6.1	2.6	-0.1	0.3
03	145.2	6.1	1.9	-0.1	0.4
04	157.1	6.1	2.1	0.0	0.3
05	169.2	6.1	2.3	0.0	0.3
06	181.2	6.2	2.1	-0.1	0.2
07	193.2	6.1	1.9	-0.2	0.5
08	205.3	6.2	1.9	0.0	0.6
09	217.3	6.3	2.3	-0.1	0.6

Q5 – What is cover meter? (Agency, PA)

Response:

The Covermeter is an electromagnetic-based device which used magnetic reluctance or eddy currents to locate steel reinforcement or other metallic embedments and estimate concrete cover depth. It only measured small areas, not much bigger than a cell phone at a time.

Q6 - What is the difference between the traditional ASTM C1074 and the new AASHTO T314 specifications? (Academic, SC)

Response:

Although both methods rely on the same underlying principle, the AASHTO T314 approach is considerably simpler for use during pavement construction. T314 is designed for paving applications (opening to traffic strength estimation specifically), whereas ASTM C1074 applies more broadly to all concrete applications, including structural elements. The advantages of the T314 method are listed below.

- Accuracy is much improved by using field produced concrete for development of the calibration curve.
- Another key advantage is that the calibration curve can be established on the very first day of paving.
- The number of beams/cylinders needed to develop the maturity curve is significantly less.
- Developing the calibration curve requires only two strength measurements before and two after the target strength is reached. In most cases, this requirement is met in under 7 days and 14-day and 28-day strengths are not required.
- Verification of the calibration curve is required less frequently, which further simplifies the process (fewer specimens need to be cast).
- The datum temperature is assumed rather than determined through testing, not as ASTM C1074 requires — further reducing testing effort and time.
- T314 essentially builds in a factor of safety in the strength measurement because air content will be reduced during the haul route to the paver, resulting in the concrete losing some entrained air thereby the pavement results in some degree of higher strength in the pavement than what the Maturity test is estimating.

Q7 - Slide 10 - Do the probes for the surface resistivity need to be on a smooth surface, or can you apply them on a tined surface? (Industry, Australia)

Response:

The resistivity probes on a surface resistivity meter are spring loaded. So, they can be applied on a tined surface (within reason).

Q8 - Slide 16 - What is a lower bound R square acceptable value? (Industry, Australia)

Response:

For most tests a R square of .75 is considered pretty good.

Q9 - Slide 22 - Have there been any proficiency studies in the USA of GPR devices to provide some degree of uncertainty value of slab thickness to common GPR devices? (Industry, Australia)

Response:

Not to our knowledge.

Q10 - Slide 27 - It is assumed the plate does not rust over time and have an impact from curling?

Response:

The plates are typically galvanized to minimize corrosion, but because these are typically used to measure thickness during construction, corrosion is generally not a concern. With respect to curling, it is theoretically possible that severe upward curling could affect the measurement if the slab actually loses contact with the base, but this is highly unlikely at very early ages when these measurements are typically performed. The plates are commonly no bigger around than a basketball and normally placed away from the pavement edge and saw cutes in order to avoid interference of the measurement with dowls and tie bars. I have never heard of a curling issue that was caused by a Maturity plate.

Q11 - Slide 34 - What is the typical cost of the MIT Dowel Scan device? (Industry, Australia))

Response:

In the US the cost of the MIT Dowel Scan is in the $70-$75k range.

Q12 - Slide 35 - Does the curing compound have an impact on the measuring device surface? (Industry, Australia)

Response:

No. The curing compound has dried before you would be walking on the slab and testing. The curing compound doesn't interfere with the testing operation.

Q13 – Expanding on GPR... Ground coupled and air launched antennae have been used by Fugro for 20 years for network level collection at highway speeds. The frequency of the antennae dictates accuracy and penetration. Using multiple ones on the same van provide comprehensive information about thickness of all pavement layers, changes in moisture and void detection. (Industry, TX)

Response:

Thank you for these additional insights on GPR usage.

Q14 – As an FYI, FHWA's Infotechnology website has a complete list of NDT tests and their applications, pro and cons. (Industry, Texas)

Response:

Correct. Thank you for mentioning. It can be found at:
https://infotechnology.fhwa.dot.gov/.