

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

NON-DESTRUCTIVE THICKNESS DETERMINATION OF PAVEMENTS  
USING MAGNETIC IMAGING TOMOGRAPHY TECHNOLOGY

**1. SCOPE**

- 1.1 Determine thickness of pavements through non-destructive means.
- 1.2 This procedure is applicable for any items of pavements requiring thickness testing.

**2. PURPOSE**

- 2.1 Determine pavement thickness.

**3. EQUIPMENT**

- 3.1 MIT Scan T2 scanner, MIT Scan T3 scanner, or equivalent.
- 3.2 Round metal targets of type and diameter according to Table 1.

**Table 1**

Pavement Type	Name	Material	Disc Diameter	Disc Thickness	Minimum New Pavement Thickness	Maximum New Pavement Thickness
Asphalt	AL RO 07	Aluminum	7.0 cm (2.75 in)	1.0 mm (0.39 in)	5/8 in	4 ¾ in
	AL RO 12	Aluminum	12 cm (4.72 in)	1.0 mm (0.39 in)	1 5/8 in	7 in
	AL RO 30	Aluminum	30 cm (11.81 in)	0.5 mm (0.20 in)	4 ¾ in	13 ¾ in
Concrete	ST RO 30	Steel	30 cm (11.81 in)	0.65 mm (0.26 in)	4 ¾ in	13 ¾ in

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**4. PROCEDURES**

4.1 Placement

4.1.1 Place discs after milling, sweeping, subgrade/base preparation, or any other procedures prior to paving. Place discs on level, stable base free of rocks or other debris at randomly selected locations according to sampling plans in the appropriate specifications.

4.1.2 For Concrete paving, place reflector discs at least 3 feet from dowel bars, tie bars, steel reinforcement, or other metallic objects. When an Automatic Dowel Bar Inserter is used, place an additional disc 7 feet ahead of the specified disc in order to avoid dowel bars.

4.1.3 If necessary, secure reflector discs to the base. Use an appropriate amount of PK nail(s), typically no more than 4, to ensure the disc remains in place and does not lift, tilt, or bend during paving operations.

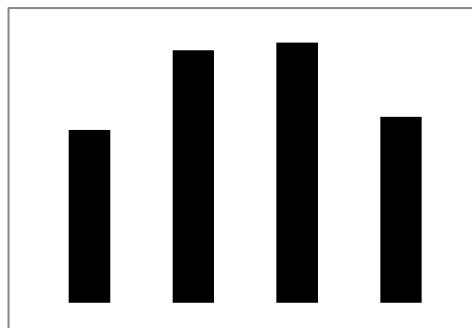
4.2 Measurement

4.2.1 Follow the manufacturer's instructions for operating the scanner.

4.2.2 Select the appropriate reflector type in the scanner settings based on the disc placed at the site during construction.

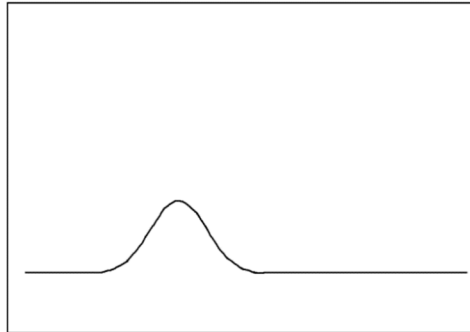
4.2.3 Locate the reflector disc by using the scanner's applicable search function. When the disc is located, the screen will show an output similar to Figure 1 below.

**Figure 1**

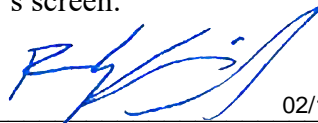


4.2.4 Place the scanner about 1-2 feet before the location of the edge of the reflector disc and start measurements. At a slow walking pace, roll the sensor unit in a straight line over the location of the disc at a steady rate until the scanner reading is complete. The screen will show an output similar to Figure 2 below.

**Figure 2**



- 4.2.5 To avoid incorrect readings, it is important to avoid testing close to any steel, including vehicles, equipment, steel toed shoes, and manhole covers.
- 4.2.6 Take three readings at each location. The readings should all be within 0 to 2 mm of each other. If the difference between any of the readings is more than 2 mm, take 3 additional readings. If any of the 3 readings are again different by more than 2 mm, the engineer may require drilling a core to determine the thickness.
- 4.3 Reporting
- 4.3.1 Data collection can be performed by data transfer from the scanner to a computer, or by using Form 701.10.01. When reporting readings on paper, report numbers as accurate as they are shown on the scanner's screen.



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