**Multi-Segment Time Domain Reflectometry (TDR) probe**
Environmental Sensors Inc. (ESI)

Measuring Dielectric  
R/WIS Compatible

- 4 – probes (235.00 ea)  
- 1 – board (4400.00)  
- 1 – Cr10X (1400.00)  
- 1 – MDX 50 (450.00)  
- 1 AMIG/32 (400.00)  
- 1 – delay cable (45.00 ea)  
- 1 – insertion/extraction kit (92,000)

Need AC power (at RWIS)

**Total cost estimate**  
$8555.00

**Recommend for new and reconstructed pavements**

Roberson, Johnson  
March 2003
Frost Probes: Measures Frost Depth down to 8 feet

This system is recommended when retro-fitting to existing R/WIS stations.

Array of Single Waveguides
1. Time Domain Reflectometry (TDR)
2. Measures soil dielectric
3. R/WIS Compatible
4. System Hardware
   12 – TDR waveguides (270.00)
   2 – TDR multiplier (450.00)
   1 – CR 10X (1400.00)
   *1 – AM16/32 (Thermocouple) (400.00)
   1 – TDR100 (4000.00)
5. Power requirements
   a. (remote location, relayed to R/WIS) 12 VDC
6. Hardware cost estimate $9490.00 + communication
7. Communication Hardware
   1 – NL100 (500.00)
   1 – Sc32A (200.00)
   1 PS12LA (300.00)

8. **Total cost estimate $10,500

** Assumes R/WIS RPU has either serial or Ethernet port available.
*Resistance Probe*

Measure resistance
R/WIS – N/A
Recommendations:
  Mn/DOT Office of Materials.
  Don’t recommend using this for future installations

Photo unavailable at this time.