



MINISTERIO
DE FOMENTO

CEDEX

CENTRO DE ESTUDIOS
Y EXPERIMENTACIÓN
DE OBRAS PÚBLICAS

**2nd International Symposium
on Non-Destructive Testing
for Design Evaluation and Construction Inspection**

**Transportation Research Arena (TRA'08)
Ljubljana, April 25, 2008**

**NDT for the
Accelerated Pavement Testing**

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What is APT ?

- **ALT** ~ Accelerated Load Testing (of pavements)
- **APT** ~ Accelerated Pavement Testing

Controlled application of a **prototype wheel loading** to a **prototype or actual pavement**

to determine:

- Pavement **response**
- Pavement **performance**

under a
**controlled & accelerated
accumulation of damage.**



CEDEX Test Track



CEDEX Test Track



CEDEX Test Track



CEDEX Test Track



CEDEX Test Track



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CEDEX Test Track



CEDEX Test Track



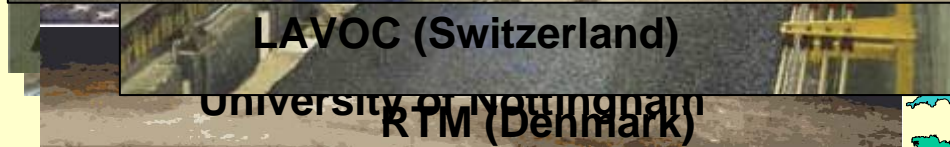
CEDEX Test Track



CEDEX Test Track



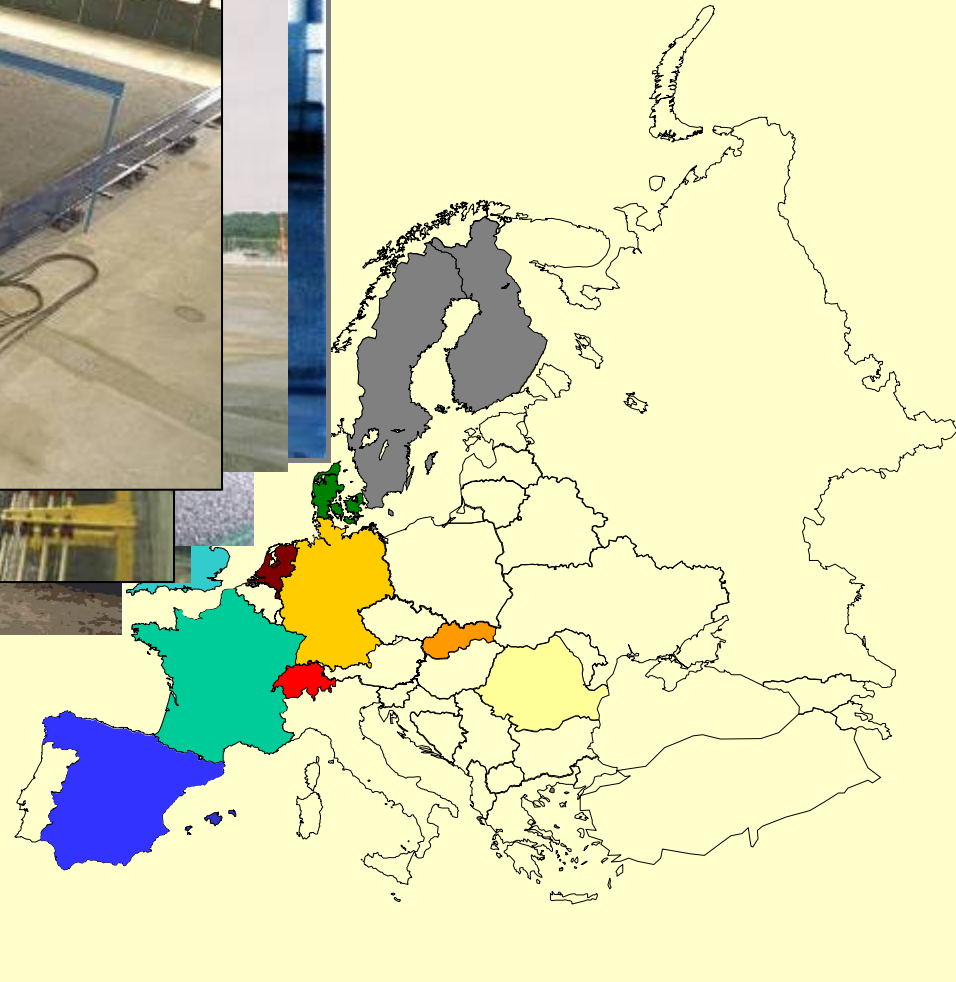
APT Facilities in Europe



LAVOC (Switzerland)

**University of Nottingham
RTM (Denmark)**

PTF (Great Britain)



Third International Conference on Accelerated Pavement Testing

3rd International Conference

APT'08

MADRID, SPAIN - OCTOBER 1-3, 2008



**1-3 October 2008
Madrid**

Hosted by:



Supported by:

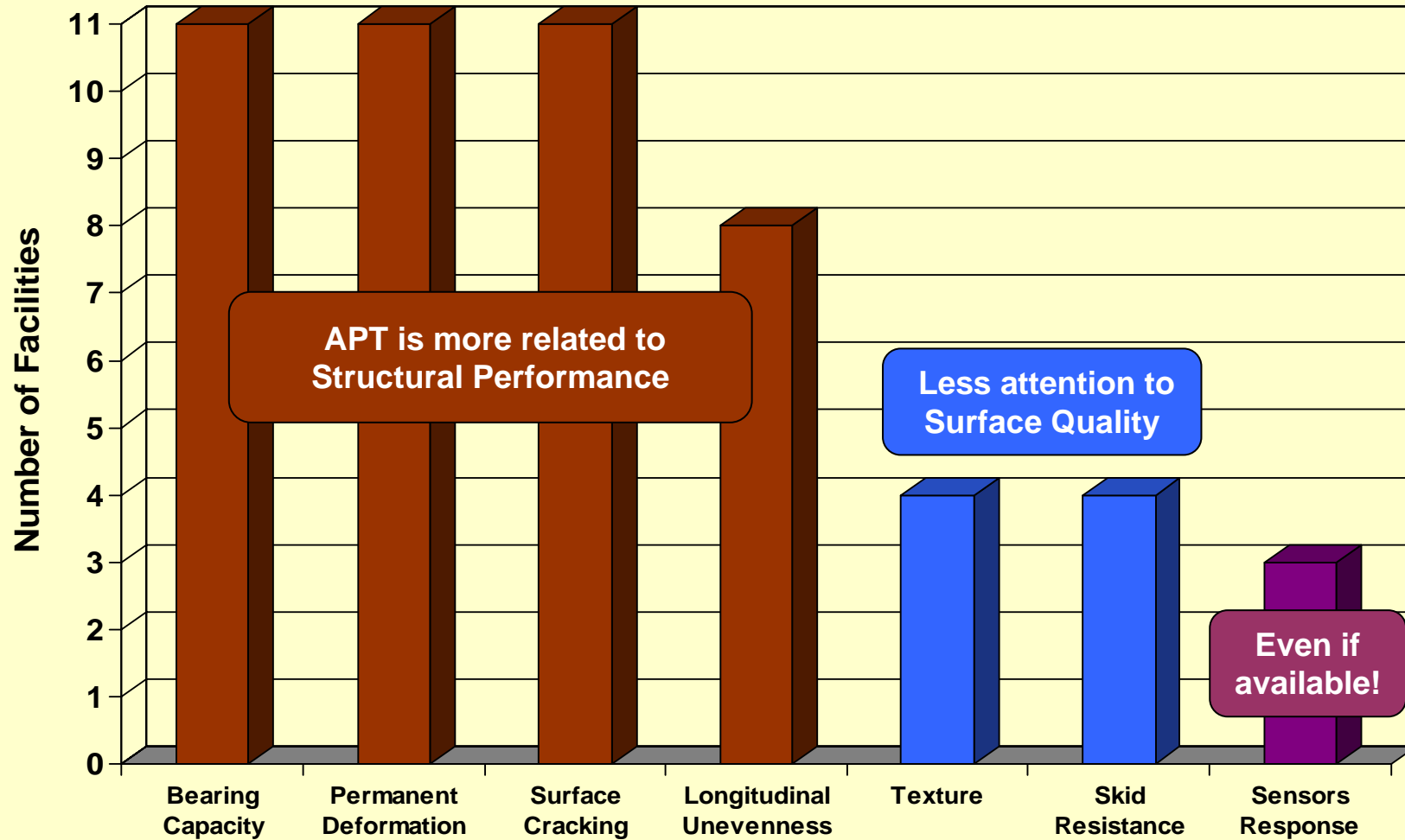


www.cedex.es/apt2008

Why NDT for APT ?

- **Important Area of Civil Engineering Community**
 - **Early Results**
 - **Controlled / Known Test Conditions**
 - **Real Materials under Real Conditions**
 - **Improved Reliability**
 - **Detailed knowledge of Pavement Performance**
-

APT Performance Monitoring

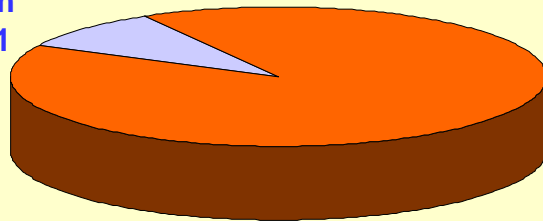


Source:
Survey from 11 Full-Scale European Facilities

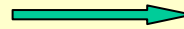
APT Performance Monitoring

Bearing Capacity

Benkelman
Beam
1 / 11



FWD
10 / 11



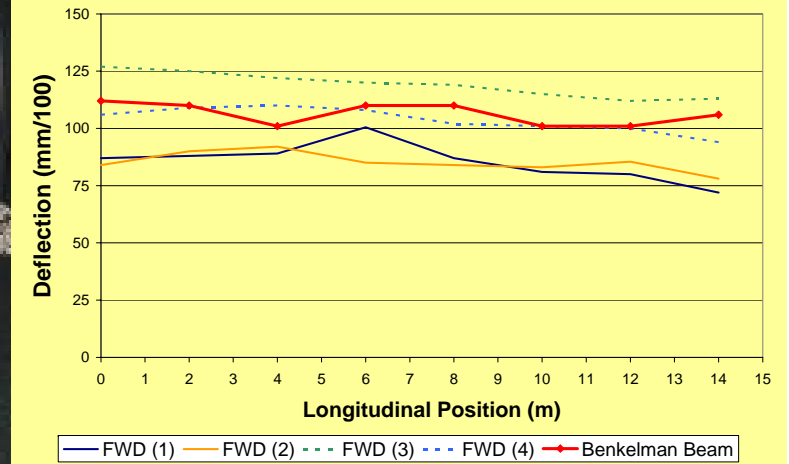
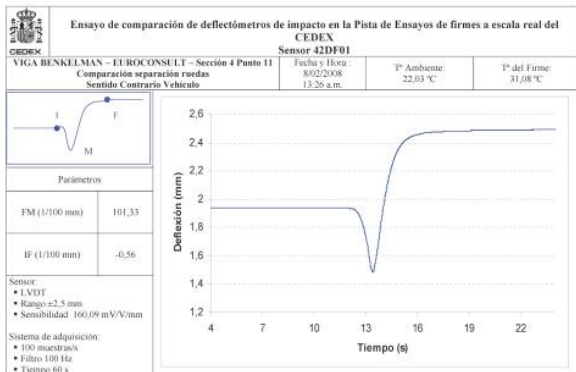
Realistic Loading

Suitable Site for...

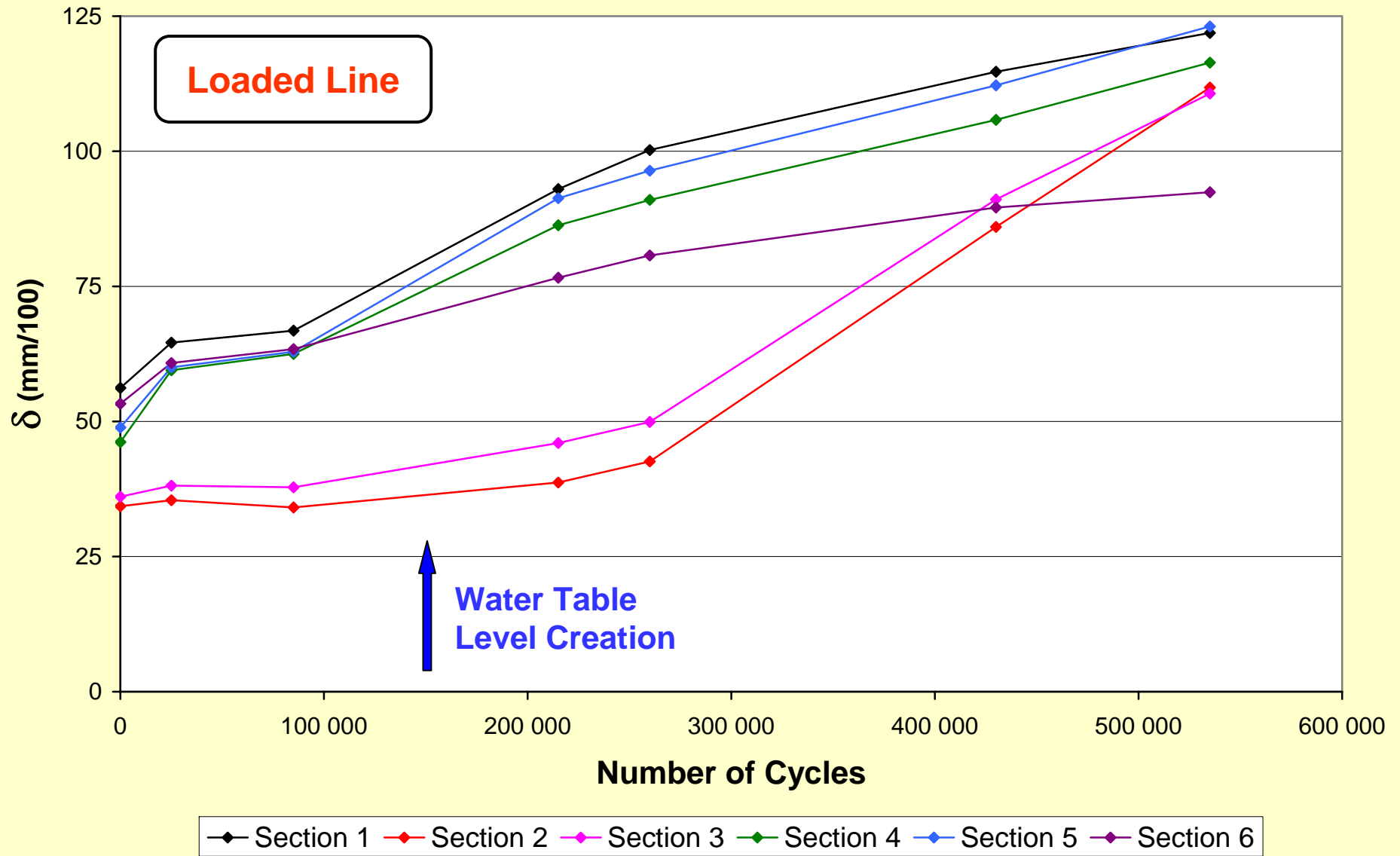
- ✓ **Demonstration Projects**
- ✓ **Comparing Different Techniques**
- ✓ **Improving the Techniques**

APT Performance Monitoring

Comparative Testing of Deflectometers

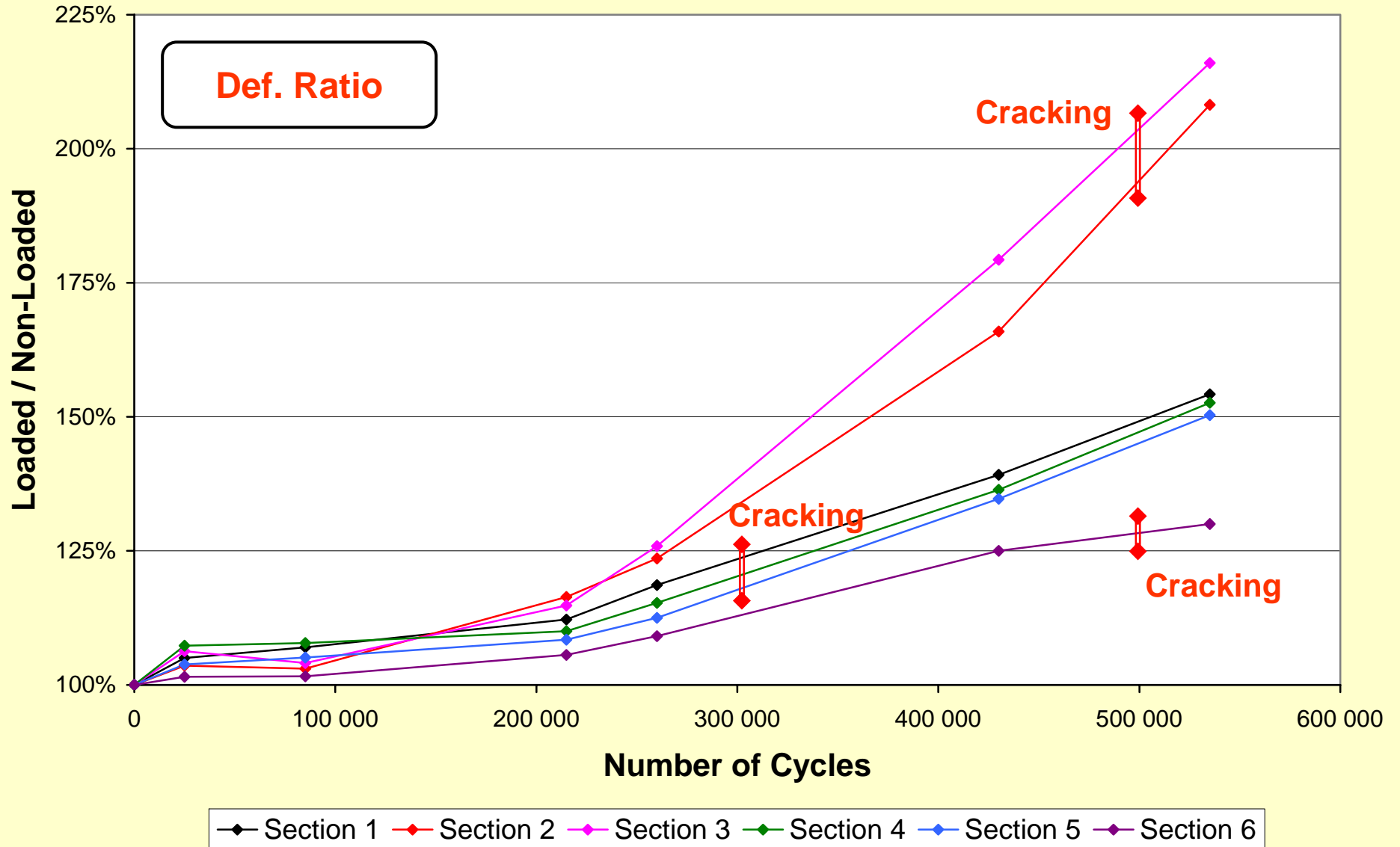


APT Performance Monitoring



FWD Test *How to separate moisture effect ?*

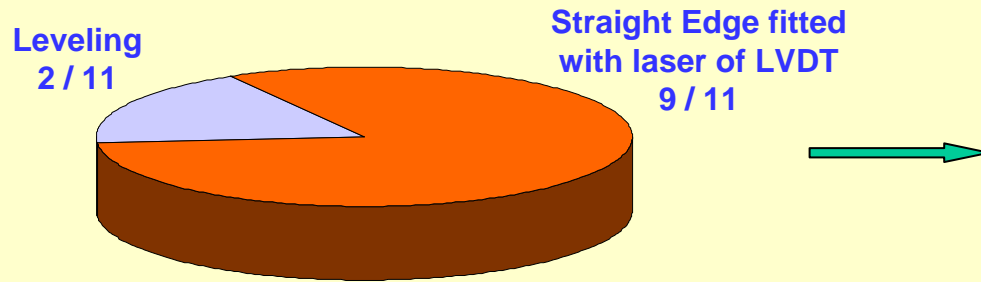
APT Performance Monitoring



FWD Test *It is not only a matter of measuring !!!*

APT Performance Monitoring

**Permanent
Deformation**

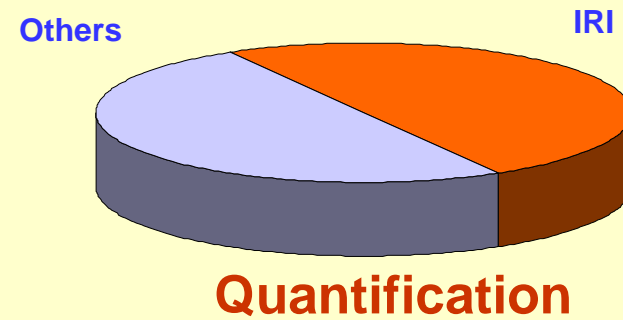
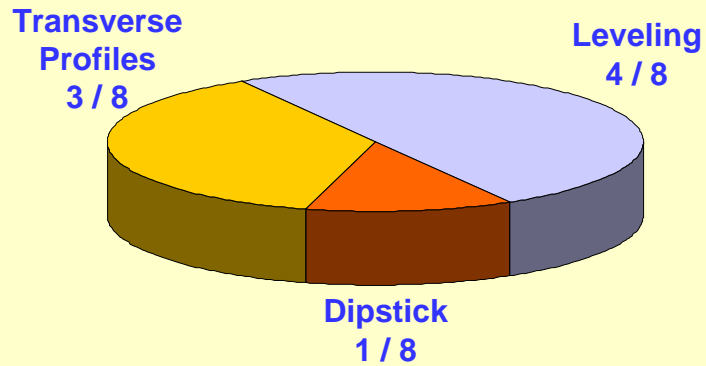


**High Performance Devices
Not typically used**

Appropriate NDT Existing Techniques for Real Roads...

APT Performance Monitoring

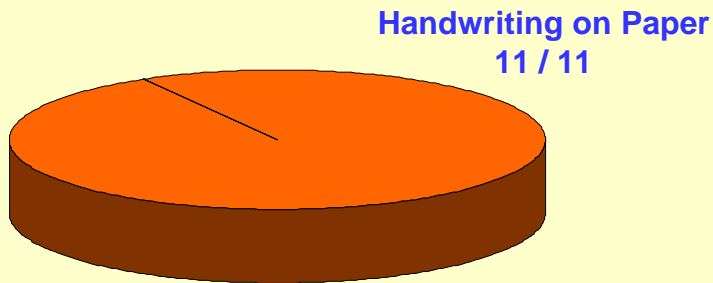
Longitudinal Unevenness



Appropriate NDT Existing Techniques for Real Roads...

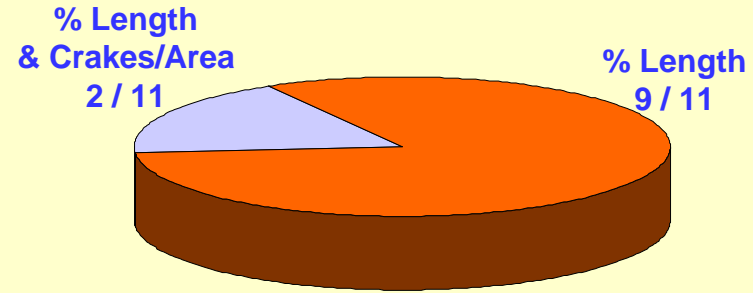
APT Performance Monitoring

Surface Cracking



** Sometimes combined with Pictures*

Quantification



** Only 3 consider crack width*

Suitable Site for...

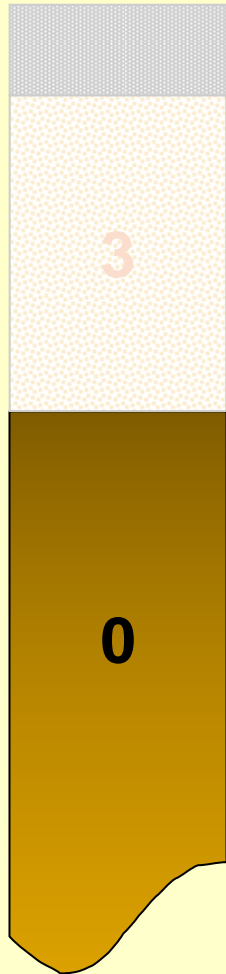
- ✓ **Demonstration Projects**
- ✓ **Comparing Different Techniques**
- ✓ **Improving the Techniques**



Construction Quality Assurance

Subgrade Test

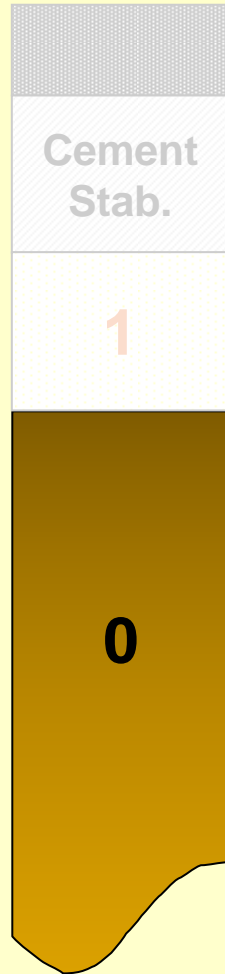
Section 1



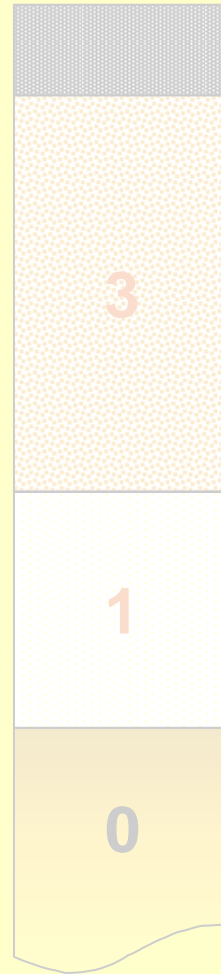
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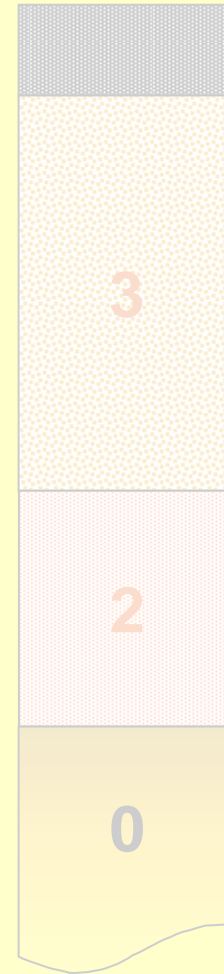
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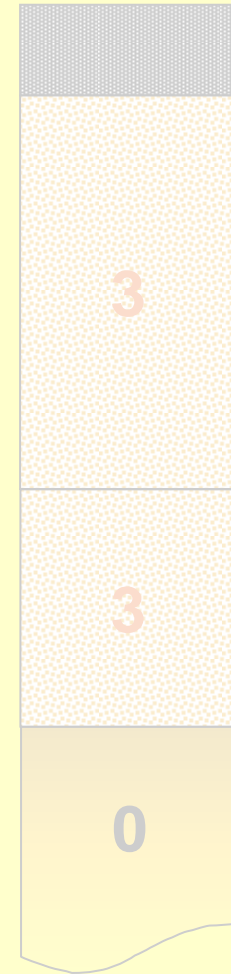
Section 4



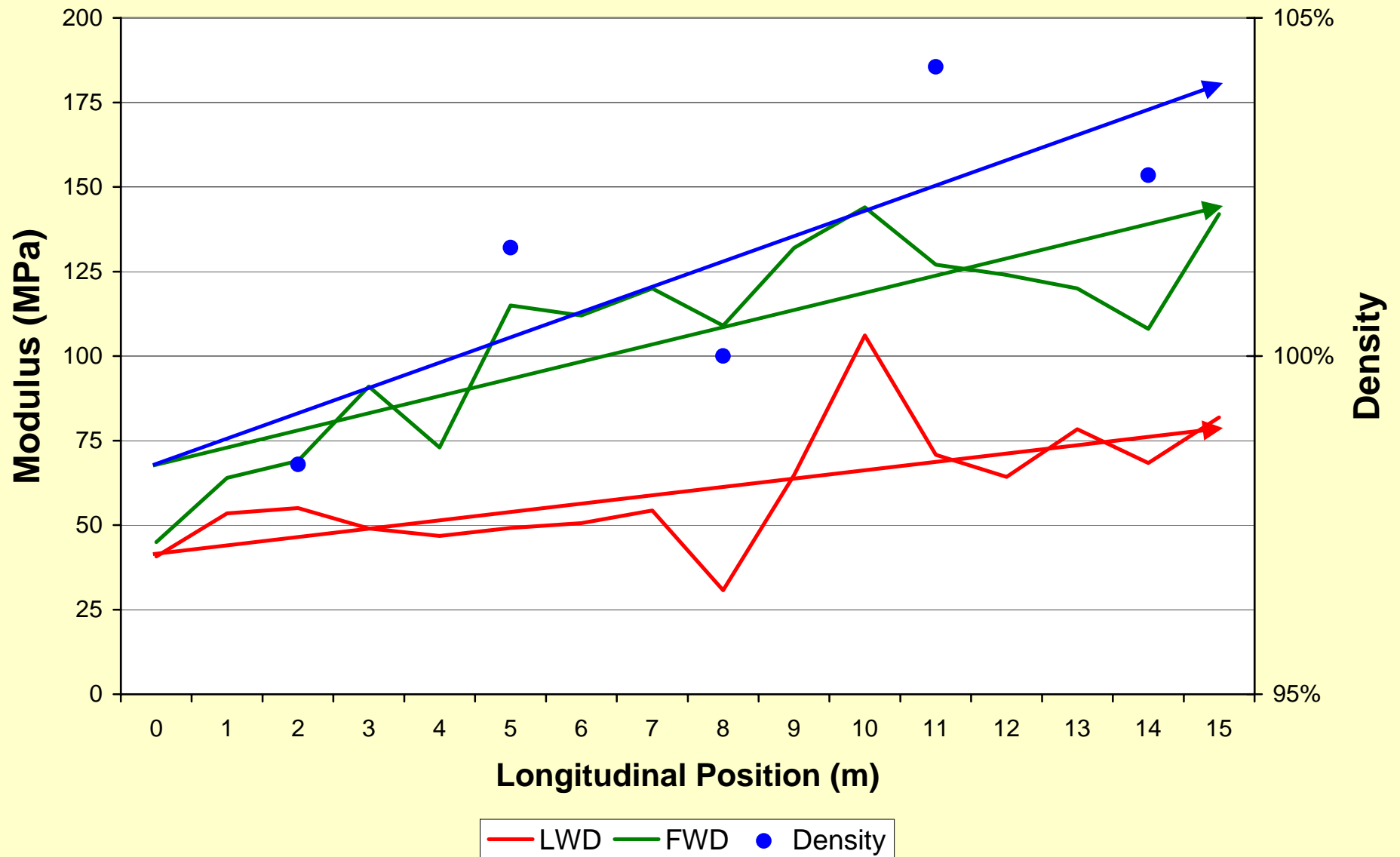
Section 5



Section 6

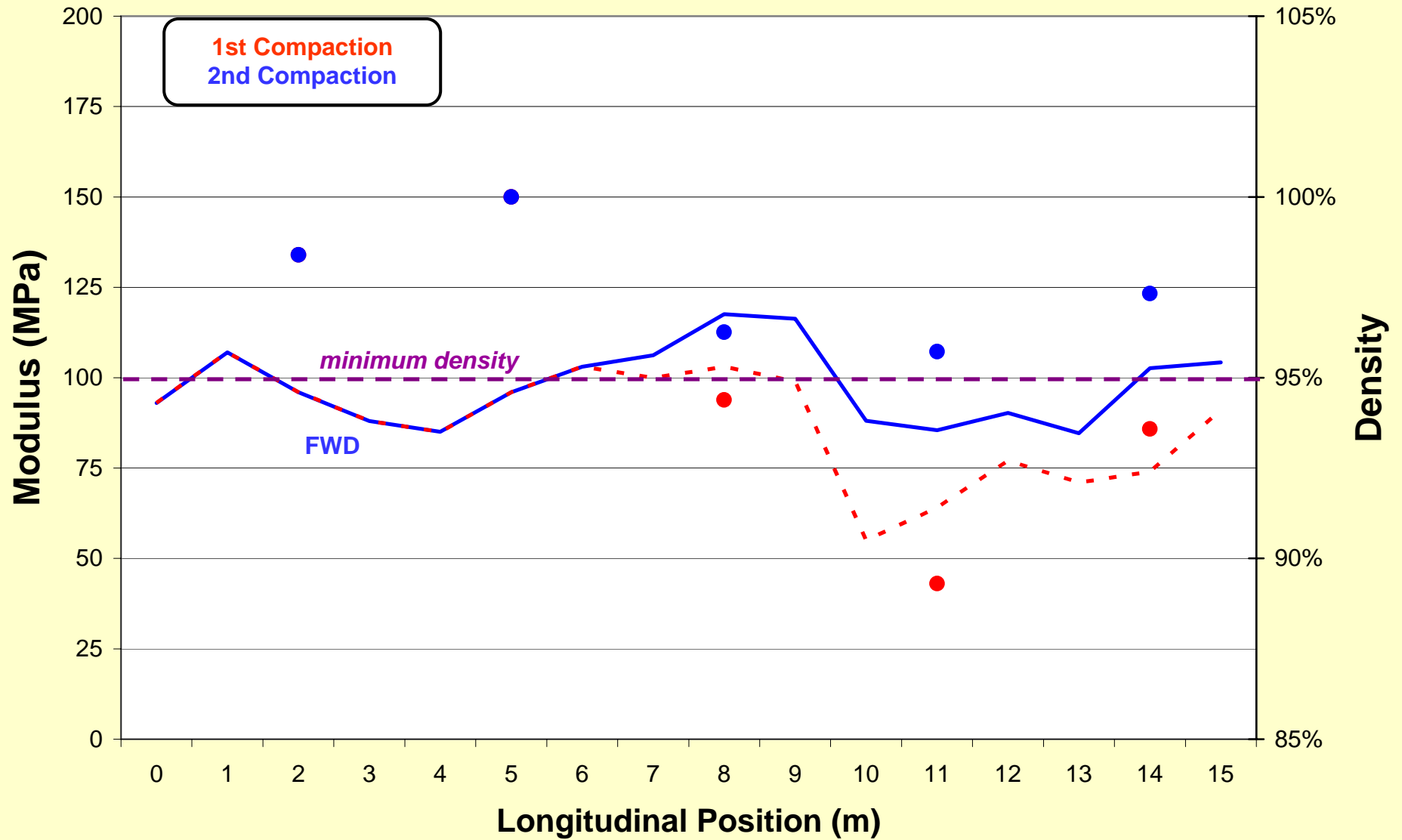


Construction Quality Assurance



Light Weight Deflectometer Evaluation

Construction Quality Assurance



Intelligent Compaction ?

Final Conclusion

**APT Full-Scale Facilities are
Suitable Sites for NDT
Techniques Demonstration,
Implementation and
Development**